

Final Soil Cover Remedial Design - Specifications

U.S. Army Corps of Engineers Kansas City District



Roebling Steel Superfund Site,
Operable Unit 5
Remedial Design: Soil Cover
Florence Township, New Jersey

September 13, 2019



**TECHNICAL SPECIFICATIONS
ROEBLING STEEL SUPERFUND SITE – OUS
FINAL REMEDIAL DESIGN SUBMITTAL**

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SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 SITE LOCATION

Work to be performed under this Contract is located in the Village of Roebing, Florence Township, Burlington County, New Jersey. Vicinity and location maps are shown on the cover sheet of the Contract Drawings.

1.2 SITE DESCRIPTION AND HISTORY

The Roebing Steel Company Site is a 200-acre property bordered to the southeast by Second Avenue and Hornberger Avenue in the Village of Roebing, Florence Township, Burlington County, New Jersey. The site is bordered to the north by the Delaware River (Main Channel and Back Channel) and to the southeast by Crafts Creek. A shared-use railroad track (light rail and freight) runs adjacent to the southeastern boundary of the site, and a New Jersey Transit station is located on the southern edge of the site property. U. S. Route 130 is approximately ½ mile south of the site.

Residential properties in the Village of Roebing are located to the west and southwest of the site at a zoning density of approximately eight dwellings per acre. Most residential development adjacent to the site was constructed by the steel plant operators and used to house plant employees. The nearest residences are approximately 60 feet from the site property boundary and the Slag Area. Two public playgrounds, the Roebing Park and Railroad Avenue playground, are located adjacent to the site. The Site is currently inactive except for portions of the property that have been remediated and redeveloped including the New Jersey Transit Station, the Roebing Museum Area, the two public playgrounds, and the Slag Area/Sediment Placement Area that is currently used as a passive recreational park. The remainder of the Township consists of farmlands, wetlands, and forested areas, except for a few residential areas abutting roadways.

The Roebing Steel Company Site is an inactive facility that was used from 1906 until 1982, primarily for the production of steel products. Steel production resulted in the generation of significant quantities of waste materials in both liquid and solid forms. Large volumes of contaminated wastewaters were generated, treated to various degrees, and discharged to Crafts Creek and the Delaware River. Large quantities of solid wastes, including slag, mill scale, spent refractory materials, and other production residues, were disposed at the site. Slag material was used to fill in a large portion of the bordering Delaware River shoreline. Approximately 70 buildings on the main plant area of the site contained heavy metals-contaminated process dust on the walls and floors; contaminated process equipment, tanks, pits, and sumps; underground piping systems; and damaged friable asbestos.

The site was proposed for inclusion on the U. S. Environmental Protection Agency (EPA) National Priorities List (NPL) of Superfund sites in December 1982 and added to the list in September 1983. In May 1985, EPA began a remedial investigation and feasibility study (RI/FS) to characterize the nature and extent of the contamination present at the site. Due to the numerous contamination sources and

various pathways for exposure associated with the site, EPA is addressing the remediation in a phased approach. There are five operable units (OUs):

- OU1 addressed the removal of drums, transformers, tanks, baghouse dust, chemical piles, tire piles, and contaminated soil underneath the water tower in Roebing Park, which is also historically referred to as the “northwest park”.
- OU2 addressed the removal of contaminated soil from the Railroad Avenue Park, which is also historically referred to as the “southeast park.”
- OU3 addressed the remediation of the Slag Area by installing a soil cap that supports a storm water management system and shoreline stabilization.
- OU4 addresses removal and disposal of underground storage tanks (USTs), aboveground storage tanks (ASTs), pits, sumps, underground piping, process dust, friable asbestos abatement, decontamination and demolition of buildings, and historical mitigation activities.
- OU5 addresses the remediation of site-wide soils, river and creek sediments, and groundwater.

The remedies for OU1, OU2, and OU3 have been completed. The remedies for OU4 and OU5 are ongoing.

1.3 SITE TOPOGRAPHY

The site topography is essentially flat, except for a hill on the southern boundary of the slag disposal area that rises to Riverside Avenue, a steep slope down to the banks of the Delaware River, and that portion of the slag area where crucible-shaped slag piles are present. The site is situated between 15 and 45 feet above mean sea level (amsl), in the Delaware River drainage basin, and is mostly above the 100-year flood plain except for two portions of the slag disposal area. The MGH area is situated between elevation 25 and 45 amsl. Existing site conditions are presented in Contract Drawings Sheets C-1 through C-4.

1.4 RECORD OF DECISION (ROD) OBJECTIVES

The September 2003 OU5 ROD final remedy for the site outlined the RAOs, which address the human health risks and environmental concerns. The RAOs to be addressed by the design for OU5 are defined in the 2003 ROD as:

- Prevention of human exposure to contaminated site-wide soils and slag material based on current and anticipated future uses.
- Reduction in risk to ecological receptors from exposure to contaminated soils and slag materials to acceptable levels.
- Minimization of contaminant migration from the soils and slag material to the groundwater and surface water to levels that ensure the beneficial reuse of these resources.

- Compliance with federal and state regulations consistent with current and anticipated future uses, or request waivers.

Soil Alternative 3 was selected and consist of the following components:

- Capping of site-wide contaminated soil not previously capped, including the Slag Area. Two distinct capping options are considered based on the physical characteristics of different portions of the site, and the current and potential future uses of each portion, Option (a) soil/asphalt, and Option (b) soil only; the cap will support a storm water management system and erosion controls along the shoreline.
- Implementation of a long-term maintenance and monitoring program to ensure the integrity of the capped areas.
- ICs to restrict future excavations through the soil cap and limit future land uses.

To date, several Remedial Actions (RAs) for soil have been implemented in the following areas of the site: the New Jersey Transit Station, the Roebing Museum Area, the Isolated Parcel, and the OU3 Slag Area and OU5 Sediment Placement Area. In addition, erosion controls have been constructed along the entire shoreline of the site, and contaminated sediments from the Back Channel and Crafts Creek have been remediated.

1.5 REMEDIAL ACTION SCOPE

The scope of this RA shall consist of placement of a soil cap in a portion of the Main Plant Area between Roebing Museum and Slag Area, extension of the existing soil cap along the revetment, installation of 12-foot wide access road to the OU3 Slag Area, modifications to fencing, protection of trees located within the revetment, and development of a long-term maintenance and monitoring plan.

1.6 WORK COVERED BY CONTRACT DOCUMENTS

1.6.1 The Contractor shall complete all work covered by the Contract Documents, including but not limited to the following:

- Site preparation, including mobilization, clearing, utility identification, establishing temporary utility connections, construction of a staging area and temporary facilities, construction of an equipment decontamination area, and establishment of site security
- Soil erosion and sediment control measures
- Clearing and grubbing
- Grading and cover installation
- Installation of 12-foot wide access road to the OU3 Slag Area
- Fence relocation, installation, and expansion
- Protection of monitoring wells and selected trees along the revetment

- Site restoration, including installation of topsoil and hydroseeding
 - Demobilization and long-term inspection and maintenance
- 1.6.2 The listing of work items and work sequence presented herein may not include all specific items. The exact description of work shall be covered by the full Contract Documents.
- 1.6.3 Obtaining the necessary permits and approvals from applicable federal, state, and local regulatory agencies to execute the project. The Contractor shall be responsible for all fines related to permits/authorization issued regarding the work completed by the Contractor and their subcontractors. Permits necessary include, but are not limited to:
- 1.6.3.1 The approved Soil Erosion and Sediment Control (SESC) Plan, certified by the Burlington County Soil Conservation District (BCSCD), will be obtained by the Contractor. The Contractor must keep this permit on site at all times.
- 1.6.3.2 The NJPDES Request for Authorization (RFA) permit equivalency for Stormwater Discharge during Construction, will be obtained by the Contractor. The Contractor must keep this permit on-site at all times.
- 1.6.3.3 The Division of Land Use (DLUR) permit equivalency for coastal permitting, flood hazard area control act, tree preservation, impacts to riparian zone vegetation, threatened and endangered species habitat impacts, restoration of vegetation impacts, timing restrictions (tree removal), and stormwater management will be provided to the Contractor. The Contractor must keep this permit on-site at all times.
- 1.6.3.4 The Contractor shall obtain any remaining permits associated with this Contract.
- 1.6.4 Providing all submittals identified in the Specifications and summarized in the submittal register to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.
- 1.6.5 Providing all utilities, materials, equipment, labor, and facilities required to perform the work specified herein in accordance with the Contract Drawings and Specifications.
- 1.6.6 Mobilization, including all labor, materials, and equipment required to provide the following:
- 1.6.6.1 Compliance with health and safety requirements as specified in SECTION 01351 – HEALTH, SAFETY AND EMERGENCY RESPONSE FOR CONTAMINATED SITES.
- 1.6.6.2 Site preparation in accordance with the Contract Drawings and as specified in SECTION 02120 – SITE PREPARATION.
- 1.6.6.3 Construction of a staging area, as shown on the Contract Drawings or as directed by the Government, and in accordance with SECTION 01500 – TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES.
- 1.6.6.4 Installation of temporary facilities as specified in SECTION 01500 – TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES.

- 1.6.6.5 Providing and maintaining site security in accordance with SECTION 01540 – SECURITY.
- 1.6.6.6 Construction of the decontamination area in accordance with SECTION 02120 – SITE PREPARATION and the Contractor’s approved plan.
- 1.6.6.7 Performing a pre-construction survey in accordance with SECTION 01550 – SURVEYING.
- 1.6.6.8 Performing clearing and grubbing in accordance with SECTION 02120 – SITE PREPARATION.
- 1.6.6.9 Performing perimeter air monitoring in accordance with SECTION 01362 – PERIMETER AIR MONITORING.
- 1.6.6.10 Implementing soil erosion and managing stormwater as specified in SECTION 02370 – EROSION CONTROL AND STORMWATER MANAGEMENT.
- 1.6.6.11 Performing grading and cover installation in accordance with SECTION 02230 – EARTHWORK AND GRADING and SECTION 02273- GEOTEXTILE.
- 1.6.6.12 Completing site restoration, including seeding and landscaping and installation of gabion wall in accordance with SECTION 02276 – GABION WALL, SECTION 02930 – LOAMING AND SEEDING and SECTION 02950 – LANDSCAPING, respectively.
- 1.6.6.13 Install chain link fence on the perimeter of the soil cover area in accordance with SECTION 02821 – CHAIN LINK FENCE.
- 1.6.6.14 Construct 12-foot wide access road to the Slag Area in accordance to SECTION 02575 – BITUMINUS CONCRETE PAVEMENT.
- 1.6.6.15 Conducting a final site survey and preparing As-Built Drawing(s) documenting site restoration conditions upon completion of remediation in accordance with SECTION 01550 – SURVEYING.
- 1.6.6.16 Conduct waste management and disposal of all waste generated during RA activities in accordance with SECTION 02130 – TRANSPORTATION AND OFF-SITE DISPOSAL.
- 1.6.6.17 Implementing green remediation measures during construction in accordance with SECTION 01670 – GREEN REMEDIATION REQUIREMENTS.
- 1.6.6.18 Demobilizing and securing the site.
- 1.6.6.19 Completing closeout and project documentation in accordance with SECTION 01780 – PROJECT CLOSEOUT.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01201

PRE-CONSTRUCTION AND PRE-WORK CONFERENCES

PART 1 GENERAL

1.1 PRE-CONSTRUCTION CONFERENCE

Within 30 calendar days after issuance of the Notice to Proceed (NTP), the Contractor shall meet with the Government for a Pre-Construction Conference. The purpose of this conference is to discuss the contract clauses (Division 0) and project schedules.

1.2 PRE-WORK CONFERENCE

1.2.1 Within 21 calendar days after the Pre-Construction Conference and prior to mobilization, a Pre-Work Conference shall be held between the Contractor and the Government. Attendance by the Contractor's superintendent, quality control personnel, safety personnel, and any major subcontractor's superintendents shall be required. The purpose of this conference is to review submittals, safety, payrolls and labor relations, environmental protection, project schedules and payment, and procurement of materials.

1.2.2 Unless otherwise specified, the Contractor shall submit for review six copies of the following at least 14 calendar days prior to the Pre-Work Conference:

1.2.2.1 Project Organizational Chart, Project Manager Name and Experience, and Data Retrieval Record Keeping System, in accordance with SECTION 01310 – JOB SITE ADMINISTRATION.

1.2.2.2 Initial and Revised Project Schedules, in accordance with SECTION 01320 – PROJECT SCHEDULE.

1.2.2.3 Submittal Register, in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.2.2.4 Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP), in accordance with SECTION 01351 – HEALTH, SAFETY AND EMERGENCY RESPONSE FOR CONTAMINATED SITES.

1.2.2.5 Environmental Protection Plan, in accordance with SECTION 01355 – ENVIRONMENTAL PROTECTION.

1.2.2.6 Perimeter Air Monitoring Plan, in accordance with Section 01362 – PERIMETER AIR MONITORING.

1.2.2.7 Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP), in accordance with SECTION 01450 – CHEMICAL DATA QUALITY CONTROL.

1.2.2.8 Contractor Quality Control (CQC) Plan, in accordance with SECTION 01451 – CONTRACTOR QUALITY CONTROL.

1.2.2.9 Pre-Remedial Action Survey, in accordance with SECTION 01550 – SURVEYING.

1.2.2.10 Security Plan, in accordance with SECTION 01540 – SECURITY.

1.2.2.11 Inspection and Maintenance Plan, in accordance with SECTION 01800 – INSPECTIONS AND MAINTENANCE.

1.2.2.12 Site Preparation Plan, in accordance with SECTION 02120 – SITE PREPARATION.

1.2.2.13 Waste Management and Transportation Plan and Disposal Facility Names and Permits, in accordance with SECTION 02130 –TRANSPORTATION AND OFF-SITE DISPOSAL.

1.2.2.14 Erosion and Sedimentation Control and Stormwater Management Plan, in accordance with SECTION 02270 – EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT.

1.2.3 During the Pre-Work Conference, these submittals will be briefly reviewed to provide the Government with a general understanding of the Contractor's plans for working at the site. The Contractor's schedule, particularly for the initial startup period, will be discussed. Questions concerning the administrative requirements outlined during the Pre-Construction Conference or any other aspect of the project may also be addressed.

1.3 PRE-CONSTRUCTION QUALITY CONTROL CONFERENCE

After the Pre-Work Conference and before start of construction, a Pre-Construction Quality Control Conference shall be held between the Contractor and the Government. The purpose of this conference is to discuss the quality control procedures to be used for all onsite work, and to define the interrelationship of the Contractor's Management and the Government's Quality Assurance. Additional details are provided in SECTION 01451 – CONTRACTOR QUALITY CONTROL.

1.4 PRE-CONSTRUCTION SAFETY CONFERENCE

The Contractor shall meet with the Government for a Pre-Construction Safety Conference before the start of construction. The purpose of this conference is to discuss how work will be safely executed, including, but not limited to, work procedures, safety considerations associated with those work procedures, heavy equipment to be used, training required to operate this equipment, and other safety requirements, such as training to be conducted and safety equipment to be used.

1.5 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals with an "FIO" designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.5.1 Conference Meeting Minutes; SD-03 Product Data; GA

The Contractor shall record the minutes of the meetings, including significant proceedings and decisions arising from the four conferences, and within five calendar days after each meeting, shall furnish 10

copies of the minutes to the Government. After the Government's review and approval, the Contractor shall distribute copies of the minutes to each participant in the meeting and to parties affected by decisions made at the meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

3.1.1 The Contractor shall schedule and administer the Pre-Construction Conference, Pre-Work Conference, Pre-Construction Quality Control Conference, and Pre-Construction Safety Conference, as specified in Paragraphs 1.1 through 1.4 herein.

3.2 GENERAL CONFERENCE MEETING REQUIREMENTS

The Contractor shall administer the following general requirements for the conference meetings:

3.2.1 Prepare agendas for the conferences.

3.2.2 Make physical arrangements for the conferences.

3.2.3 Preside at the conferences.

3.2.4 Record the minutes, including a detailed description of proceedings and decisions.

END OF SECTION

SECTION 01202

PROJECT PROGRESS MEETINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 This section describes the minimum requirements for conducting Project Progress Meetings during execution of the work.

1.1.2 The Contractor shall schedule and administer Project Progress Meetings a minimum of once per week, as well as any additional meetings requested by either the Government or the Contractor during any stage of this project when it is deemed necessary to raise any significant questions, establish new guidelines, introduce a new aspect of the project, or discuss any other items that will affect the progress of work. The Contractor and all necessary personnel, as determined by the Government, shall attend these meetings for the duration of this contract. A suggested meeting agenda is provided in Paragraph 3.3 of this section.

1.1.3 Meetings and conferences shall take place at the project site or some other location that is satisfactory to both the Government and the Contractor.

1.2 ATTENDANCE

The following persons shall attend the Project Progress Meetings:

- 1.2.1 EPA project manager.
- 1.2.2 Contracting Officer or its representative.
- 1.2.3 The Contractor's site superintendent.
- 1.2.4 The Contractor's project manager.
- 1.2.5 The Contractor's quality control manager and/or key quality control staff.
- 1.2.6 The Contractor's safety and health manager and/or safety and health officer.
- 1.2.7 NJDEP's project manager or representative.
- 1.2.8 Subcontractors as appropriate to the agenda.
- 1.2.9 Suppliers as appropriate to the agenda.
- 1.2.10 Others as requested by the Government or as appropriate to the agenda.

1.3 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals with an “FIO” designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.3.1 Project Progress Meeting Minutes; SD-03 Product Data; GA

The Contractor shall be responsible for recording the minutes of all Project Progress Meetings and including any significant proceedings and decisions. The Contractor shall reproduce and submit to the Government, within two calendar days after each meeting, an electronic copy of the minutes of the meeting. After the Government’s review and approval, the Contractor shall distribute copies to each participant in the meeting and to parties affected by decisions made at the meeting.

1.3.2 Project Cost Summary Report; SD-03 Product Data; GA

On a weekly basis, the Contractor shall submit to the Government three (3) copies of the Project Cost Summary Report for review and approval.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall schedule and administer Project Progress Meetings a minimum of once per week and additional meetings as required, and if requested by the Contracting Officer.

3.2 GENERAL MEETING REQUIREMENTS

The Contractor shall administer the following general requirements for the Project Progress Meetings:

3.2.1 Prepare the agenda for meetings.

3.2.2 Make physical arrangements for meetings.

3.2.3 Preside at meetings.

3.2.4 Record the minutes, including a detailed description of proceedings and decisions.

3.3 SUGGESTED AGENDA

The following is a suggested agenda for Project Progress Meetings:

3.3.1 Review and approval of the minutes of the previous meeting.

3.3.2 Review of health and safety issues.

- 3.3.3 Review of work progress.
- 3.3.4 Permit activities.
- 3.3.5 Field observations, problems, and conflicts.
- 3.3.6 Review and revision of the project schedule, including:
 - 3.3.6.1 Review of problems and proposed changes for their effect on construction, completion date, and other subcontractors on the project, and corrective actions proposed to regain the projected schedule.
 - 3.3.6.2 Review of offsite delivery schedules.
 - 3.3.6.3 Coordination of schedules, including review and expedition, as required, of submittal schedules.
 - 3.3.6.4 Planned progress during the succeeding work period based on the current project schedule.
 - 3.3.6.5 Milestone dates.
- 3.3.7 Review of transmittals submitted to USACE, submittals returned from USACE, transmittals pending re-submittal, and Requests for Information (RFIs).
- 3.3.8 Review of quality control, including all completed inspections (Preparatory Phase, Initial Phase, Follow-Up Phase, Pre-Final, and Final), scheduled inspections, and the deficiency tracking system.
- 3.3.9 Pending and proposed changes and substitutions.
- 3.3.10 Progress payment and cost tracking.
- 3.3.11 Community relations issues.
- 3.3.12 Assignment of action items.
- 3.3.13 Decision of other business, as appropriate.

END OF SECTION

SECTION 01310

JOB SITE ADMINISTRATION

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall provide all services required to ensure site safety, site communication, project management, recordkeeping, and individual additional task performance. These services shall include the provision of qualified personnel, to be accepted by the Government, and all equipment necessary to perform such tasks.

1.2 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals with an “FIO” designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.2.1 Project Organizational Chart; SD-01 Pre-Construction Submittals; GA

The Contractor shall submit an organizational chart including all personnel to be employed on the project.

1.2.2 Project Manager Name and Experience; SD-01 Pre-Construction Submittals; GA

Within 14 calendar days following the Notice to Proceed, the Contractor shall submit in writing to the Government the name and experience of the Project Manager.

1.2.3 Data Retrieval Recordkeeping System; SD-01 Pre-Construction Submittals; GA

The Contractor shall submit a description of the proposed data retrieval recordkeeping system.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SITE SAFETY

The Contractor shall be responsible for the safe operation of the work at the Site and shall employ a Safety and Health Manager (SHM) and a Site Safety and Health Officer (SSHO). These individuals shall be responsible for the administration of site health and safety, and shall have responsibilities as defined in SECTION 01351 – SAFETY, HEALTH, AND EMERGENCY RESPONSE FOR CONTAMINATED SITES.

3.2 QUALITY CONTROL

The Contractor shall be responsible for the overall management of quality control and shall employ a Contractor Quality Control System Manager (CQCSM) who shall have the authority to act in all quality control matters for the Contractor. The CQCSM shall be responsible for quality control as defined in SECTION 01451 – CONTRACTOR QUALITY CONTROL.

3.3 PROJECT MANAGEMENT AND RECORDKEEPING

3.3.1 The Contractor shall provide a project management team including Project Manager and administrative personnel qualified and capable to manage the project, including supervising construction, expediting labor relations, staffing, and recordkeeping. The Contractor shall submit a detailed Project Organizational Chart showing the individuals directly involved in the project, in accordance with Paragraph 1.2.1.

3.3.2 The Project Manager shall have overall responsibility for conducting the work and for ensuring that the work is conducted in accordance with the requirements of the Contract Documents. The Project Manager shall be responsible for communication with the Government and shall officially represent the Contractor in all project-related activities. The Project Manager shall have the authority to sign payments and change orders. The Contractor shall provide the name and experience of the Project Manager in accordance with Paragraph 1.2.2.

3.3.3 The Contractor shall provide a data retrieval recordkeeping system approved by the Government, which will make available in a timely manner records of all site activity, quantities of materials delivered to the Site, quantities of materials utilized, quantities of materials excavated, quantities of treated water discharged, quantities of waste produced, laboratory results, waste transportation information, and all other information required to support requests for payment.

3.3.4 Prior to initiating the work, the Project Manager may be required to meet with local government and residents with permission from the Government, and, in the presence of the Environmental Protection Agency (EPA), to discuss the planned construction approach and phasing of work. The Contractor shall record the minutes of the meeting and include all significant proceedings and decisions. Items to be discussed shall include, but are not limited to:

3.3.4.1 Planned construction methods.

3.3.4.2 Type and size of equipment and operating procedures, including heavy equipment operations and mechanical equipment operations, etc.

3.3.4.3. Effect of construction on overhead and buried utilities.

3.3.4.3 Community protection requirements.

3.3.4.4 Temporary traffic control patterns.

3.3.4.5 Planned work hours.

3.3.4.6 Emergency contact procedures.

3.4 WORKING HOURS

3.4.1 Working hours shall be scheduled by the Contractor to occur between 7:00 am to 5:00 pm, Monday through Friday. Work shall not be permitted before 7:00 am or after 5:00 pm unless approved by the Government.

3.4.2 The Contractor may be permitted to conduct construction activities six days per week, Monday through Saturday, with the approval of the Government.

3.4.3 Written notification of any changes to the normal work schedule, including work before 7:00 am, after 5:00 pm, or on Saturdays, shall be submitted to the Government at least one (1) week in advance of proposed changes. Work shall not be permitted on Sundays or holidays.

END OF SECTION

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

PART 1 GENERAL

1.1 CONTRACT ADMINISTRATION

1.1.1 The United States Army Corps of Engineers (USACE) will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the USACE-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. This joint USACE-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the USACE in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data

1.1.2 Correspondence and Electronic Communications

For ease and speed of communications, both USACE and the Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.3 Other Factors

Particular attention is directed to Contract Clauses “Schedules for Construction Contracts” and “Payments”, Specification SECTION 01320 – PROJECT SCHEDULE, SECTION 01330 – SUBMITTAL PROCEDURES, and SECTION 01451 – CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The USACE will make the QCS software available to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the USACE RMS website. Upon

specific justification and request by the Contractor, the USACE can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the USACE RMS website as they become available.

1.3 SYSTEM REQUIREMENTS

The system configuration to run the QCS shall meet the following minimum hardware and software requirements:

- **Hardware:**
 - IBM-compatible PC with 1000 MHz Pentium or higher processor
 - 256+ MB RAM for workstation / 512+ MB RAM for server
 - 1 GB hard drive disk space for sole use by the QCS system
 - Optimal Disk (CD or DVE) Reader 8x speed or higher
 - SVGA or higher resolution monitor (1024 x 768, 256 colors)
 - Mouse or other pointing device
 - Windows-compatible printer; laser printer must have 4+ MB of RAM
 - Connection to the Internet, minimum 56k BPS
- **Software:**
 - MS Windows Windows 7 or Windows 10
 - QAS-Word Processing software: MS Word 2000 or newer
 - Latest version of: Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher
 - Electronic mail (E-mail) MAPI compatible
 - Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the USACE RMS website ('<http://rms.usace.army.mil>').

1.5 CONTRACT DATABASE

Prior to the Pre-Construction Conference, the USACE will provide the Contractor with basic contract award data to use for QCS. The USACE will provide data updates to the Contractor as needed, generally by using the USACE's secure file transfer protocol (SFTP) repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, Quality Assurance (QA) comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract at the Contractor's site office. Data updates to the USACE shall be submitted using the USACE's SFTP repository built into QCS export function with file attachments,

e.g., daily reports, schedule updates, and payment requests. If permitted by the Contracting Officer, e-mail or CD-ROM may be used instead of QCS in accordance with Paragraph 1.8 - DATA SUBMISSION VIA CD-ROM. The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers of management staff, and other required items. Within 14 calendar days of receipt of QCS software from the USACE, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the USACE, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the USACE shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S" and home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001 (e.g., H-0001 or S-0001). The USACE's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, Quality Assurance/Quality Control (QA/QC) comments, Submittal Register Status, and Three-Phase Inspection checklists.

1.6.1.6 Request for Information (RFI)

Exchange all RFI using the built-in RFI generator and tracker in QCS.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. CLINs may include multiple activities, but activities may be assigned to only one such CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet, prompt payment certification, and payment invoice in QCS. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment request, prompt payment certification, and payment invoice with supporting data using the USACE's SFTP repository built into the QCS export function. If permitted by the Contracting Officer, email or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the Three-Phase QC System, prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements. The Contractor shall maintain these data on a daily basis. Entered data will automatically output to the QCS-generated daily report. The Contractor shall submit the Contractor Quality Control (CQC) Plan within the time required in SECTION 01451 - CONTRACTOR QUALITY CONTROL. Within seven calendar days of the Contracting Officer's approval, the Contractor shall submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control Reports

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by SECTION 01451 – CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Contracting Officer within 24 hours after the date covered by the report. The Contractor shall also provide the Contracting Officer with a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC Comments. The contractor shall maintain a current log of its QC

comments in the QCS database. The USACE will log the deficiencies it has identified using its QA punch list items. The USACE's QA punch list items will be included in its export file to the Contractor. The Contractor will acknowledge receipt of these QA comments by specific number reference on the Daily CQC Report. The Contractor shall regularly update the correction status of both QC and QA comments.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain a schedule and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Reporting

The USACE will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The USACE's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the USACE of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity will only be linked to a single feature of work in accordance with Paragraph 1.6.2.1 – PAY ACTIVITY DATA.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transfer property listings, installed property listings, and user training requirements in QCS, all tied to individual pay activities. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the USACE via QCS.

1.6.3.7 Labor and Equipment Hours

Log labor and equipment exposure hours on a daily basis. These data will be rolled up into a monthly exposure report.

1.6.3.8 Hazard Analysis

Use QCS to develop a hazard analysis for each feature of work included in the CQC Plan. The hazard analysis shall address any hazards, or potential hazards, that may be associated with the work.

1.6.4 Submittal Management

The Contractor shall initially enter all required submittal information into QCS. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns, as described in SECTION 01330 - SUBMITTAL PROCEDURES. Dates on which submittals are received and

returned by the USACE will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. Submittal Transmittal Forms (ENG Form 4025) and Submittal Register Updates (ENG Form 4288) shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with SECTION 01320 - PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) in accordance with SECTION 01320 - PROJECT SCHEDULE. The Contractor shall be responsible for ensuring the SDEF is in the format required to upload the data to the QCS Module. The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the USACE and to import the submittal register, other USACE-provided data from RMS, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in this Section is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the USACE with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA CD-ROM

The USACE-preferred method for the Contractor's submission of QCS data is by using the USACE SFTP repository built into QCS export function. Other data should be submitted using e-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROMs for data transfer. Data on the CDs shall be exported using the QCS built-in export function. If used, CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on CD-ROMs in English conforming to industry standards used in the United States.

1.8.2 CD-ROM Labels

The Contractor shall affix a permanent exterior label to each CD-ROM submitted. The label shall indicate in English the QCS file name, full contract number, contract name, project location, data date, and name and telephone number of person responsible for the data.

1.8.3 File Names

The files will be automatically named by the QCS software. The naming convention established by the

QCS software shall not be altered in any way by the Contractor.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the USACE with schedule update and progress payment request. As required in Contract Clause “Payments”, at least one week prior to submittal, the Contractor shall meet with the Contracting Officer Representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to the Contracting Officer’s acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The USACE will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. The QCS Module shall be completed to the satisfaction of the Contracting Officer prior to any contract payment (except for Bonds and Insurance, as approved by the Contracting Officer).

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01320

PROJECT SCHEDULE

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, materials, equipment, and incidentals required to prepare and update critical path method project schedules and prepare weekly progress reports for review at the Pre-Construction Conference and subsequent progress meetings.

1.1.2 The Contractor shall prepare and update the Contractor's Project Schedule using computer software that produces legible, easily updated critical path schedules. The software shall be capable of providing a bar chart type schedule for use by the Government in interactions with the public and for discussion at progress meetings.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of these standards, the revision in effect at the time of contract award shall apply.

UNITED STATES ARMY CORPS OF ENGINEERS ENGINEER REGULATIONS (ER)

ER 1-1-11 Progress, Schedules, and Network Analysis Systems

1.3 QUALITY ASSURANCE

The Contractor shall designate an authorized representative responsible for the preparation of all required project schedule reports. The authorized representative shall be experienced in scheduling projects similar in nature to this project and shall be experienced in the use of scheduling software that meets the requirements of this specification.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals with an "FIO" designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES. The data CD-ROMs, reports, and network diagrams required for each submission are included in Paragraph 3.5, SUBMISSION REQUIREMENTS.

1.4.1 Preliminary Project Schedule; SD-01 Pre-Construction Submittal; GA

The Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days, shall be submitted for approval within 14 calendar days after the Notice to Proceed (NTP). The Contractor shall completely cost-load the Preliminary Project Schedule to balance the contract award

Bid Item shown on the Price Schedule. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and shall include all of the required Plan and Program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Health and Safety Plan, and Environmental Protection Plan), design activities, planned submissions of all early design packages, permitting activities, design review conference activities, and other non-construction activities intended to occur within the first 90 calendar days. Any construction activities planned for the first 90 calendar days shall be scheduled after NTP. Government acceptance of the associated design package(s) and all other specified Program and Plan approvals shall constrain planned construction activities.

1.4.2 Initial Project Schedule; SD-01 Pre-Construction Submittal; GA

The Initial Project Schedule shall be submitted for approval at least 14 calendar days prior to the Pre-Work Conference. The Initial Project Schedule shall provide a reasonable sequence of activities, representing work throughout the entire project, at a reasonable level of detail.

1.4.3 Periodic Schedule Updates; SD-03 Product Data; GA

The Contractor shall submit periodic schedule updates based on the results of progress meetings, specified in Paragraph 3.6 – PERIODIC PROGRESS MEETINGS. These submissions shall enable the Government to assess the Contractor's progress. If the Contractor fails or refuses to furnish the project schedule data that, in the judgment of the Government, are necessary for verifying the Contractor's progress, the Contractor will be deemed not to have provided an estimate upon which progress payment may be made.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Pursuant to the Contract Clause "Schedule for Construction Contracts", a Project Schedule as described herein shall be prepared. The scheduling of design and construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in development of the Project Schedule. Designers, subcontractors, and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule.

3.1.1 Approved Project Schedule

The Contractor shall use the approved Project Schedule to measure the progress of the work and to aid in evaluating time extensions. The schedule shall be cost-loaded and activity coded. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Government may withhold approval of progress payments until the Contractor submits the required schedule.

3.1.2 Schedule Status Report

The Contractor shall provide a Schedule Status Report on at least a monthly basis. If, in the opinion of

the Government, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve progress, including those required by the Government, without additional cost to the Government. In this circumstance, the Government may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction planned, and to submit for approval any supplementary schedule(s) as the Government deems necessary to demonstrate how the approved rate of progress will be regained.

3.1.3 Default Terms

Failure of the Contractor to comply with the requirements of the Government will be grounds for a determination by the Government that the Contractor is not executing the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Government may terminate the Contractor's right to proceed with the work, or any part of it, in accordance with the default terms of the contract.

3.2 BASIS FOR PAYMENT AND COST-LOADING

The Contractor shall use the Project Schedule as the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified scheduling personnel will result in an inability of the Government to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all required information will result in the disapproval of the Preliminary and Initial Project Schedules and subsequent schedule updates. In the event that schedule revisions are directed by the Government and those revisions are not included in subsequent updates, the Government may hold retainage up to the maximum allowed by contract, each payment period, until such revisions to the Project Schedule have been made. Activity cost-loading shall be reasonable, as determined by the Government. The aggregate value of all activities coded to a contract bid item shall equal the value of the bid item on the Schedule.

3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Government.

3.3.1 Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM).

3.3.2 Level of Detail Required

The Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Government at the appropriate level of detail, as specified by the Government, shall result in the disapproval of the schedule. The Government will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule.

3.3.2.1 Activity Durations

Contractor submissions shall follow the direction of the Government regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations are greater than 20 work days or 30 calendar days).

3.3.2.2 Design and Permit Activities

Design and permitting activities, including necessary conferences and follow-up actions and design package submission dates, shall be integrated into the schedule.

3.3.2.3 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the Project Schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 calendar days. Examples of procurement process activities include, but are not limited to: submittals, review and approvals, procurement, fabrication, and delivery.

3.3.2.4 Mandatory Tasks

The following tasks must be included and properly scheduled:

- Mobilization (including establishing temporary facilities, staging area, and stabilized construction entrance)
- Submittal and approval of all required plans
- Permitting
- Existing conditions survey
- Clearing and grubbing
- Soil and sediment control barriers
- Installation of stormwater drainage features
- Subgrading
- Final grading and soil cover
- Site restoration
- Contractor's pre-final inspection
- Correction of punch list from Contractor's pre-final inspection

- Government's Pre-final inspection
- Correction of punch list from Government's pre-final inspection
- Final inspection
- Project close-out submittal and demobilization

3.3.2.5 Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, submittal reviews, environmental permit approvals by State regulators, inspections, utility clearance, Government Furnished Equipment and Notice to Proceed for phasing requirements.

3.3.2.6 Responsibility

All activities shall be identified in the Project Schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the subcontracting firm, contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.3.2.7 Contract Changes/Request for Equitable Adjustment (REA) Coding

Assign activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by the Government, with a Contract Changes/REA Code. Key all Code values to the Government's modification numbering system. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Government. Assign activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless approved. An activity shall not have more than one Contract Changes/REA Code.

3.3.2.8 Bid Item

All activities shall be identified in the Project Schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one Bid Item. The Bid Item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.9 Phase of Work

All activities shall be identified in the Project Schedule by the phase of work in which each activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be identified by the unique Phase of Work Code.

3.3.2.10 Category of Work

All activities shall be identified in the Project Schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as designs, design package submissions, design reviews, review conferences, permits, submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

3.3.2.11 Feature of Work

All activities shall be identified in the Project Schedule according to the feature of work to which the activity belongs. “Definable Feature of Work” is defined in SECTION 01451 – CONTRACTOR QUALITY CONTROL. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3 Scheduled Project Completion and Activity Completion

The schedule interval shall extend from the NTP date to the contract completion date. The contract completion activity (End Project) shall finish based on the required contract duration in the accepted contract proposal, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7-day calendar when the contract assigns calendar day durations for the activity, such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified, including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1 Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. The Contractor shall include as the first activity in the Project Schedule an activity called “Start Project”. The “Start Project” activity shall have an “Early Start” constraint date equal to the date that the NTP was acknowledged, and a zero-day duration.

3.3.3.2 Schedule Constraints and Open-Ended Logic

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation of project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the Project Schedule an activity called “End Project”. The “End Project” activity shall have a “Late Finish” constraint date equal to the completion date for the project, and a zero-day duration. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as “zero fee float” or “zero total float” are typically prohibited. There shall only be two open-ended activities: Start Project (or NTP) with

no predecessor logic and End Project with no successor logic.

3.3.3.3 Early Project Completion

In the event that the Project Schedule shows completion of the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4 Interim Completion Dates

Contractually-specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.3.4.1 Start Phase

The Contractor shall include as the first activity for a project phase an activity called "Start Phase X", where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero-day duration.

3.3.4.2 End Phase

The Contractor shall include as the last activity in a project phase an activity called "End Phase X", where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the project phase, and a zero-day duration.

3.3.4.3 Phase "X" Hammock

The Contractor shall include a hammock-type activity for each project phase called "Phase X", where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided by Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control Report for every in-progress or completed activity, and failure to ensure that the data contained in the Daily Quality Control Reports are the sole basis for schedule updating, shall result in the disapproval of the Contractor's schedule and the inability of the Government to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Program features which calculate one of these parameters from the other shall be disabled.

3.3.6 Out-of-Sequence Progress

Activities that have posted progress without all preceding logic being satisfied will be allowed only on a case-by-case basis approved by the Government. The Contractor shall propose logic corrections to eliminate all out-of-sequence progress or justify not changing the sequencing for approval prior to submitting an updated Project Schedule.

3.3.7 Negative Lags and Start to Finish Relationship

Lag durations contained in the Project Schedule shall not have a negative value. The Contractor shall not use Start to Finish relationships.

3.3.8 Calculation Mode

Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied (“progress override”) will not be allowed.

3.3.9 Milestones

The schedule must include milestone activities for each significant project event including but not limited to: permitting, subcontract procurement, excavation and backfill completion, and transportation and disposal of all waste.

3.4 PROJECT SCHEDULE STANDARD ACTIVITY CODING DICTIONARY

An activity coding structure shall be used as defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF-compatible schedule backup file is available on the QCS website: <http://rms.usace.army.mil/>. The SDEF format is as follows:

SDEF Format			
Field	Activity Code	Length	Description
1	WRKP	3	Workers per Day
2	RESP	4	Responsible Party (e.g. GC, subcontractor, USACE)
3	AREA	4	Area of Work
4	MODF	6	Modification or REA number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of Work
7	CATW	1	Category of Work
8	FOW1	10	Feature of Work (used up to 10 characters in length)
9	FOW2	10	Feature of Work (used up to 20 characters in length)
10	FOW3	10	Feature of Work (used up to 30 characters in length)

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the preliminary submission, initial submission, and every periodic project schedule update throughout the duration of the project.

3.5.1 Data CDs

Provide two sets of data CDs containing the Project Schedule in the backup format. Each CD shall also contain all previous update backup files. File medium shall be CD. Label each CD indicating the type of schedule (Preliminary, Initial, Update), full contract number, project name, data date and file name. Each schedule shall have a unique file name as determined by the Contractor.

3.5.2 Narrative Report

A Narrative Report shall be provided with the preliminary, initial, and each update of the Project Schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include a description of activities along the two most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to relay to the Government the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis.

3.5.3 Approved Changes Verification

Only Project Schedule changes that have been previously approved by the Government shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity-by-activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, and Total Float. Actual Start and Actual Finish Dates shall be included for completed activities. The following lists typical reports that will be requested. One or all of these reports may be requested for each schedule submission.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number.

3.5.4.2 Logic Report

A list of detailed predecessor and successor activities for every activity in ascending order by activity number.

3.5.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.4.4 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the NTP until the most recent Monthly Progress Meeting. This report shall reflect the earnings of specific activities based on the agreements made in the field and approved between the Contractor and the Government at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining Contractor payment. Activities shall be grouped by bid item and sorted by activity numbers. This report shall sum all activities in a bid item and provide a bid item percent, and complete and sum all bid items to provide a total project percent complete. The printed report shall contain, for each activity, the following: the Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5 Network Diagram

The network diagram shall be required on the initial schedule submission and on monthly schedule update submissions. The network diagram shall depict the order and interdependence of activities and the sequence in which the work is to be accomplished. The Government will use, but is not limited to, the following conditions to review compliance with this paragraph.

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity number, description, duration, and estimated earned value shall be shown on the diagram.

3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract-required interim completion dates, and contract completion date.

3.5.5.3 Critical Path

The critical path shall be clearly shown.

3.5.5.4 Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include onsite meetings conducted monthly or at other regular intervals mutually agreed to at the Pre-Construction Conference. During this meeting the Contractor shall describe, on an activity-by-activity basis, all proposed revisions and adjustments to the Project Schedule required to reflect the current status of the project. The Government will approve activity progress, proposed revisions, and adjustments as appropriate.

3.6.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.6.2 Update Submission Following Progress Meeting

A complete update of the Project Schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than four business days after the monthly progress meeting.

3.6.3 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Government. At a minimum, the Contractor shall address the following items on an activity-by-activity basis during each progress meeting.

3.6.3.1 Actual Start and Finish Dates

The Actual Start and Actual Finish Dates for each activity currently in progress or completed. The Government may allow an Actual Finish Date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign Actual Start dates when actual progress occurs on an activity.

3.6.3.2 Remaining Duration

The estimated Remaining Duration for each activity in progress. Time-based progress calculations shall be based on Remaining Duration for each activity.

3.6.3.3 Percent Complete

Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete. To allow for proper schedule management, cost-load the correction of punch list items from the Government's pre-final inspection activities not less than 1 percent of the total contract value, which activities may be declared

100 percent complete and correction of all punch list work identified during the Government's pre-final inspection.

3.6.3.4 Logic Changes

All logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, Contractor-proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include:

- Delays due to conditions beyond the Contractor's control, such as strikes and unusual weather
- Delays encountered due to submittals, Government activities, deliveries or work stoppages which make re-planning the work necessary
- Changes required to correct a schedule which does not represent the actual or planned progress of the work

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract performance period, completion date, or any interim milestone date, the Contractor shall furnish the following for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract: justification, project schedule data, and supporting evidence as the Government may deem necessary. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred), is required for any approvals.

3.7.1 Justification of Delay

The Project Schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Government's determination as to the number of allowable days of contract extension shall be based upon the Project Schedule updates in effect for the time period in question and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, shall not be a cause for a time extension to the performance period, contract completion date, or other interim milestone date.

3.7.2 Submission Requirements

The Contractor shall submit a justification for each request for a change in the contract completion date of under 14 calendar days based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, at a minimum:

- A list of affected activities, with their associated Project Schedule activity number
- A brief explanation of the causes of the change
- An analysis of the overall impact of the changes proposed
- A sub-network of the affected area

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.3 Additional Submission Requirements

For any requested time extension of over 14 calendar days, the Government may request an interim update with revised activities for a specific change request. The Contractor shall provide this information on a disk within four calendar days of the Government's request.

3.8 DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Government within 14 calendar days of the NTP being issued. The proposed revisions to the schedule will be approved by the Government prior to inclusion of those changes within the Project Schedule. If the Contractor fails to submit the proposed revisions, the Government may furnish the Contractor with suggested revisions to the Project Schedule. The Contractor shall include these revisions in the Project Schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Government, the Contractor shall advise the Government within 14 calendar days of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Government's revisions until a mutual agreement regarding the revisions is reached. If the Contractor fails to submit alternative revisions within 14 calendar days of receipt of the Government's proposed revisions, the Contractor will be deemed to have concurred with the Government's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 CONSTRUCTION PROGRESS MEETINGS

3.9.1 The Contractor shall discuss the Project Schedule during the weekly construction progress meetings for the purpose of jointly reviewing the actual progress of the project as compared to the planned progress and to review planned activities for the upcoming two weeks. The current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor's Project Manager and the Government shall attend. The progress meeting will address the status of RFIs and Submittals.

3.9.2 Provide a bar chart produced by the scheduling software, organized by Total Float and sorted by Early Start Date, and a two-week "look-ahead" schedule by filtering all schedule activities to show only current ongoing activities and activities scheduled to start during the upcoming two weeks, sorted by Early Start Date.

3.9.3 The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities) are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility-coded activities require Government corrective action.

3.10 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

3.11 TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Government pursuant to Federal Acquisition Regulation (FAR) 52.232-5 – Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 – Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals are to be the same as those used in the Contract Drawings. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

The Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, are to check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Submittals requiring Government approval are to be scheduled and made prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with the manufacturer's Safety Data Sheets (SDS) and in compliance with existing laws and regulations.

1.2 DEFINITIONS

1.2.1 Submittal Descriptions (SD)

Submittal requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

1.2.1.1 SD-01 Pre-Construction Submittals

Pre-construction submittals are required prior to the start of construction (work) issuance of contract notice to proceed, or commencing work on site, or the start of the next major phase of the construction.

1.2.1.2 SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work. Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

1.2.1.3 SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work. Samples of warranty language when the contract requires extended product use.

1.2.1.4 SD-04 Samples

Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project. Field samples and mock-ups constructed on the project site establish standards by which the work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

1.2.1.5 SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of the work.

1.2.1.6 SD-06 Test Reports

Reports signed by an authorized official of a testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accordance with specified requirements. Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to the job site. Report which includes findings of a test made at the job site or on a sample taken from the job site, on a portion of work during or after installation. Investigation reports. Daily checklists. Final acceptance tests and operational reports.

1.2.1.7 SD-07 Certificates

Statements signed by responsible officials of the manufacturer of a product, system or material attesting that the product, system or material meets the specification requirements. Must be dated after award of project contract and clearly name the project. Document required of the Contractor, or of a supplier, installer or subcontractor through the Contractor, the purpose of which is to further the quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications. Confined space entry permits.

1.2.1.8 SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Safety Data Sheets (SDS) concerning impedances, hazards and safety precautions.

1.2.1.9 SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by the manufacturer's representative to confirm compliance with the manufacturer's standards or instructions. The documentation must be signed by an authorized official of a testing laboratory or agency, must state the test results, and indicate whether the material, product, or system has passed or failed the test.

1.2.1.10 SD-10 Operation and Maintenance Data

Data that are furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. These data are needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

1.2.1.11 SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.2.2 Work

As used in this section, onsite and offsite construction required by the Contract Documents, including labor necessary to produce submittals, except those noted in SD-01 Pre-Construction Submittals above, and materials, products, equipment, and systems incorporated or to be incorporated into each construction.

1.3 SUBMITTALS

The Contractor shall submit the following in accordance with this section:

1.3.1 Submittal Register; SD-01 Pre-Construction Submittals; GA

The Contractor shall prepare, maintain, and submit the Submittal Register as detailed in Paragraph 1.9 herein.

1.4 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.4.1 Government Approval (GA)

Governmental approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause titled "Specifications and Drawings for Construction", they are considered to be "shop drawings."

1.4.2 Information Only (FIO)

All submittals not requiring Government approval will be for information only. They are not considered to be “shop drawings” within the terms of the Contract Clause referred to above.

1.5 PREPARATION

1.5.1 Transmittal Form

The sample transmittal forms (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. ENG Form 4025 is included in the QCS software that the Contractor is required to use for this contract. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care will be exercised to ensure proper listing of the specification paragraph and/or sheet number of the Contract Drawings pertinent to the data submitted for each item.

1.5.2 Identifying Submittals

When submittals are provided by a subcontractor, the Prime Contractor is to prepare, review and stamp with the Contractor’s approval all specified submittals prior to submitting for Government approval.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on each transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Date of the drawings and revisions.
- d. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other subcontractor associated with the submittal.
- e. Specification section number by which submittal is required.
- f. Submittal description (SD) number of each component of submittal.
- g. When a resubmission, add alphabetic suffix to the submittal description; for example, submittal 18 would become 18A to indicate resubmission.
- h. Product identification and location in project.

1.5.3 Marking

Prepare, review and stamp with the Contractor’s approval all specified submittals.

Permanently mark each submittal to identify it by contract number; transmittal date; Contractor’s, subcontractor’s, and supplier’s name, address(es) and telephone number(s); submittal name; specification or drawing reference; and similar information to distinguish it from other submittals. Submittal identification shall include space to receive the review action by the Contracting Officer.

1.5.4 Drawing Format

Drawing submittals shall be prepared on translucent, reproducible sheets, not less than 8-½ by 11 inches nor larger than 30 by 42 inches in size, except for full-size patterns or templates. Drawings shall be prepared to accurate size, with scale indicated, unless another form is required. Drawings are to be

suitable for reproduction and of a quality to produce clear, distinct lines and letters with dark lines on a white background.

Submit 8-½ by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.

Copies of each drawing shall have the following information clearly marked thereon:

- Job name, which shall be the general title of the Contract Drawings.
- Date of the drawings and revisions.
- Name of Contractor.
- Name of subcontractor.
- Name of the item, material, or equipment detailed thereon.
- Submittal number (e.g., first submittal to last submittal) in a uniform location adjacent to the title block.
- Specification section to which the submittal applies.
- Government contract number in the margin, immediately below the title block.

Drawings shall be numbered in a logical sequence. The Contractor may use his own number system.

A blank space, no smaller than 4 inches square, shall be reserved on the right hand side of each sheet for the Government disposition stamp.

1.5.5 Data Format

Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

Supplement product data with material prepared for the project to satisfy submittal requirements for which product data do not exist. Identify this material as developed specifically for the project, with information and format as required for submission of SD-07 Certificates.

Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable Federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, submit as specified for SD-07 Certificates.

Where equipment or materials are specified to conform to industry and technical society reference standards of organizations such as the American National Standards Institute (ANSI), ASTM

International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will not be accepted for expedition of the construction effort.

1.5.6 Samples

Samples shall be physically identical to the proposed material or product to be incorporated in the work, fully fabricated and finished in the specified manner, and full-scale. Where variations in color, finish, pattern, or texture are inherent in the material or product represented by the sample, multiple units of the sample, showing the near-limits of the variations and the "average" of the whole range (not less than three), shall be submitted. Each unit shall be marked to describe its relation to the range of the variation. Where samples are specified for selection of color, finish, pattern, or texture, the full set of available choices shall be submitted for the material or product specified. Sizes and quantities of samples shall represent their respective standard unit.

1.6 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval shall not relieve the Contractor of the responsibility for any error that may exist, as the Contractor, under the Contractor's Quality Control (CQC) requirements of this contract, is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.7 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal, in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause, "Changes", shall be given promptly to the Contracting Officer.

1.8 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment will be made for any materials incorporated into the work for any FIO submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.9 SUBMITTAL REGISTER (ENG Form 4288)

At the end of this section is one set of ENG Forms 4288 listing work plans and items of equipment and materials for which submittals are required by the specifications; this list may not be all-inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project in accordance with SECTION 01312 – QUALITY CONTROL SYSTEM (QCS).

1.10 SCHEDULING

1.10.1 Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 21 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delays, damages, or time extensions will be allowed for time lost in late submittals.

1.10.2 The Contracting Officer will review the submittal register for approval action.

1.10.3 The approved register will become a part of the contract and the Contractor shall be subject to the requirements thereof. The Contractor shall revise and/or update the register monthly to take into account all changes in the contract. Each such addition and/or revision to the register shall be submitted to the Contracting Officer for approval. This register and the progress schedules shall be coordinated.

1.11 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

1.11.1 Procedures

The Contractor shall submit five (5) copies, each with separate transmittal, to the Contracting Officer in accordance with the submittal register. The mailing address for these submittals shall be obtained at the Pre-Construction Conference. Items not to be submitted in quintuplicate, such as samples and test cylinders, shall be submitted accompanied by five (5) copies of ENG Form 4025.

1.11.2 Deviations

For submittals that include proposed deviations requested by the Contractor, the column “Variation” of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind approval of submittals containing unnoted deviations.

1.12 CONTROL OF SUBMITTALS

The Contractor shall carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor-scheduled submittal date shown on the approved submittal register.

1.13 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being stamped and dated. Three (3) copies of each submittal will be retained by the Contracting Officer and two (2) copies of each submittal will be returned to the Contractor.

1.14 INFORMATION ONLY SUBMITTALS

Normally, submittals for information only will not be returned. Approval of the Contracting Officer is not required on FIO submittals. This shall not relieve the Contractor from the obligation to furnish material conforming to the Contract Documents and will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material that has been incorporated into the work. Additionally, this shall not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract.

1.15 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR (FIRM NAME)
____ Approved
____ Approved with corrections as noted on submittal data and/or attached sheet(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

1.16 RESUBMISSION REQUIREMENTS

1.16.1 Make any corrections or changes to the submittals required by the Contracting Officer and resubmit until approved.

1.16.2 Revise initial drawings or data, and resubmit as specified for the initial submittal.

1.16.3 Indicate any changes that have been made other than those requested by the Contracting

Officer.

1.16.4 Samples: Submit new samples as required for initial submittal.

1.17 CONTRACTOR'S RESPONSIBILITIES

1.17.1 The Contractor shall review shop drawings, product data and samples prior to submission to determine and verify the following:

1.17.1.1 Field measurements

1.17.1.2 Field construction criteria

1.17.2 The review and approval of shop drawings or samples by the Contracting Officer shall not relieve the Contractor from its responsibility with regard to the fulfillment of the terms of the contract. The Contractor assumes all risks of error and omission, and the Contracting Officer will have no responsibility thereof.

1.17.3 No portion of the work requiring shop drawings, working drawings, samples, or catalog data shall be started nor shall any materials be fabricated, installed or used on the Site prior to the approval of the Contracting Officer. Fabrication performed, materials purchased or onsite construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Contracting Officer will not be liable for any expense for delay due to corrections or remedies required to accomplish conformity.

1.17.4 Project work, materials, fabrication and installation shall conform to approved shop drawings, working drawings, applicable samples, and catalog data.

1.18 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

If specifically required in other sections of these specifications, the Contractor shall submit a P.E. Certification for each item required, in the form attached to this section, completely filled in and stamped.

1.19 GOVERNMENT'S REVIEW

1.19.1 Review Notations

The Contracting Officer will review submittals and provide pertinent notation within 21 calendar days after date of submission. Submittals will be returned to the Contractor with the following notations:

1.19.1.1 Submittals marked "approved" authorize the Contractor to proceed with the work covered.

1.19.1.2 Submittals marked "approved as noted" authorize the Contractor to proceed with the work covered provided he takes no exception to the corrections. Notes shall be incorporated prior to submission of the final submittal.

1.19.1.3 Submittals marked “return for correction” require the Contractor to make the necessary corrections and revisions and to re-submit them for approval in the same routine as before, prior to proceeding with any of the work depicted by the submittal.

1.19.1.4 Submittals marked “not approved” or “disapproved” indicate noncompliance with the contract requirements and shall be re-submitted with appropriate changes. No item requiring a submittal shall be accomplished until the submittals are approved or approved as noted.

1.19.2 The Contractor shall make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the Contract Drawings or specifications, notice as required under the Contract Clause entitled “Changes” shall be given to the Contracting Officer. Approval of the submittals by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. The Contractor shall be responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor’s expense.

1.19.3 If changes are necessary to approved submittals, the Contractor shall make such revisions and resubmit the submittals in accordance with the procedures above. No item of work requiring a submittal change shall be accomplished until the changed submittals are approved.

1.19.4 Sample Approval

1.19.4.1 Furnish, for the approval of the Contracting Officer, samples required by the specifications or by the Contracting Officer. Shipping charges shall be paid by the Contractor. Materials or equipment requiring sample approval shall not be delivered to the Site or used in the work until approved in writing by the Contracting Officer.

Each sample shall have a label indicating:

- Name of project
- Name of Contractor
- Material or equipment
- Place of origin
- Name of producer and brand
- Specification section to which sample applies
- Samples of furnished material shall have additional markings that will identify them under the finished schedules.

1.19.4.2 The Contractor shall submit to the Contracting Officer two samples of materials where samples are requested. Transmit to the Contracting Officer with each sample a letter, original and two copies, containing the above information.

1.19.4.3 Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any contract requirements. Before submitting samples, the Contractor shall ensure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

1.19.4.4 Materials and equipment incorporated in the work shall match the approved samples. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense if requested.

1.19.4.5 Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. The Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

1.19.4.6 Variations from contract requirements shall be specifically pointed out in transmittal letters. Failure to point out deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

1.19.4.7 Samples of various materials or equipment delivered on the Site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals. The Contractor shall replace such materials or equipment to meet contract requirements.

1.19.4.8 Approval of the Contractor's samples by the Contracting Officer shall not relieve the Contractor of his responsibilities under the contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

P. E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the State

of New Jersey and that he/she has been employed by

_____ to design _____
(Name of Contractor) (Insert P.E. Responsibilities)

in accordance with Specification Section _____

for the

(Name of Project)

The undersigned further certifies that he/she has performed the design of the

(Name of Project)

that said design is in conformance with all applicable local, State, and Federal codes, rules, and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the Contracting Officer or Contracting Officer's Owner's representative within seven days following written request by the Contracting Officer.

_____ P.E. Name

_____ Signature

_____ Address

_____ Contractor's Name

_____ Signature

_____ Title

_____ Address

END OF SECTION

SUBMITTAL REGISTER											CONTRACT NUMBER				
TITLE AND LOCATION															
ROEBLING STEEL OU-5 - SUPERFUND SITE, FLORENCE TOWNSHIP, NEW JERSEY															
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSIFICATION		
			PRECONSTRUCTION SUBMITTALS	SHOP DRAWINGS	PRODUCT DATA	SAMPLES	DESIGN DATA	TEST REPORTS	CERTIFICATES	MFRS INSTRUCTIONS	MFRS FIELD REPORT	OPERATION & MAINTENANCE DATA	CLOSEOUT SUBMITTALS	FOR INFORMATION ONLY	GOVERNMENT APPROVAL
01201	1.5.1	CONFERENCE MEETING MINUTES			●										●
01202	1.3.1	PROJECT PROGRESS MEETING MINUTES			●										●
01202	1.3.2	PROJECT COST SUMMARY REPORT			●										●
01310	1.2.1	PROJECT ORGANIZATIONAL CHART	●												●
01310	1.2.2	PROJECT MANAGER NAME AND EXPERIENCE	●												●
01310	1.2.3	DATA RETRIEVAL RECORDKEEPING SYSTEM	●												●
01320	1.3.1	PRELIMINARY PROJECT SCHEDULE	●												●
01320	1.3.2	INITIAL PROJECT SCHEDULE	●												●
01320	1.3.3	PERIODIC SCHEDULE UPDATES			●										●
01351	1.3.1	ACCIDENT PREVENTION PLAN (APP)/SITE SAFETY AND HEALTH PLAN (SSHP)	●												●
01351	1.3.2	WORK ZONE AND DECONTAMINATION FACILITY DRAWINGS		●											●
01351	1.3.3	WEEKLY SAFETY AND ACCIDENT REPORTS			●								●		
01351	1.3.4	ACTIVITY HAZARD ANALYSES			●										●
01351	1.3.5	EXPOSURE AND AIR MONITORING DATA							●				●		
01351	1.3.6	PERSONNEL HEALTH AND SAFETY CERTIFICATES							●				●		
01351	1.3.7	SAFETY AND HEALTH MANAGER STATEMENTS							●				●		
01351	1.3.8	CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT							●				●		
01351	1.3.9	PROJECT SAFETY AND HEALTH PHASE-OUT REPORT										●	●		
01355	1.3.1	ENVIRONMENTAL PROTECTION PLAN	●												●
01355	1.3.2	PROTECTION FEATURES SURVEY REPORT			●										●
01362	1.3.1	PERIMETER AIR MONITORING PLAN (PAMP)	●												●
01362	1.3.2	PROGRESS REPORTS						●						●	
01380	1.2.1	PRE-CONSTRUCTION AND POST-CONSTRUCTION PHOTOGRAPHS										●	●		
01380	1.2.2	PROGRESS PHOTOGRAPHS										●	●		
01381	1.2.1	PRE-CONSTRUCTION, PROGRESS, AND POST-CONSTRUCTION VIDEO										●	●		

SUBMITTAL REGISTER											CONTRACT NUMBER				
TITLE AND LOCATION															
ROEBLING STEEL OU-5 - SUPERFUND SITE, FLORENCE TOWNSHIP, NEW JERSEY															
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSIFICATION		
			PRECONSTRUCTION SUBMITTALS	SHOP DRAWINGS	PRODUCT DATA	SAMPLES	DESIGN DATA	TEST REPORTS	CERTIFICATES	MFRS INSTRUCTIONS	MFRS FIELD REPORT	OPERATION & MAINTENANCE DATA	CLOSEOUT SUBMITTALS	FOR INFORMATION ONLY	GOVERNMENT APPROVAL
01450	1.3.1	UNIFORM FEDERAL POLICY QUALITY ASSURANCE PROJECT PLAN (UFP-QAPP)	●												●
01450	1.3.2	ANSETS DATA REQUIREMENT FORM AND TRIP REPORT						●						●	
01450	1.3.3	ANALYTICAL DATA						●						●	
01450	1.3.4	NON-CONFORMANCE REPORTS						●						●	
01450	1.3.5	CHEMICAL DATA FINAL REPORT (CDFR)						●							●
01450	1.3.6	LOAM AND FILL MATERIAL TESTING RESULTS						●							●
01450	1.3.7	WASTE CHARACTERIZATION SAMPLE RESULTS						●						●	
01451	1.3.1	CQC PLAN	●												●
01451	1.3.2	CQC ORGANIZATIONAL CHANGES			●										●
01451	1.3.3	CQC REPORTS			●									●	
01451	1.3.4	COORDINATION MEETING MINUTES			●										●
01500	1.2.1	TEMPORARY SITE FACILITY LAYOUT PLAN		●											●
01540	1.2.1	SECURITY PLAN	●												●
01550	1.3.1	PRE-REMEDIAL ACTION SURVEY	●											●	
01550	1.3.2	SURVEYOR QUALIFICATIONS			●									●	
01550	1.3.3	SURVEY ACCURACY DOCUMENTATION			●									●	
01550	1.3.4	SURVEYOR FIELD NOTES			●									●	
01550	1.3.5	COMPLIANCE SURVEYS										●		●	
01550	1.3.6	AS-BUILT DRAWINGS										●			●
01670	1.2.1	RENEWABLE ENERGY PROGRAM			●										●
01670	1.2.2	FUEL			●										●
01670	1.2.3	PAPER PRODUCT LITERATURE			●										●
01670	1.2.4	GREEN REMEDIATION DOCUMENTATION							●					●	
01780	1.3.1	REMEDIAL ACTION (RA) REPORT										●			●
01800	1.2.1	INSPECTION AND MAINTENANCE PLAN	●												●

SUBMITTAL REGISTER											CONTRACT NUMBER				
TITLE AND LOCATION															
ROEBLING STEEL OU-5 - SUPERFUND SITE, FLORENCE TOWNSHIP, NEW JERSEY															
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSIFICATION		
			PRECONSTRUCTION SUBMITTALS	SHOP DRAWINGS	PRODUCT DATA	SAMPLES	DESIGN DATA	TEST REPORTS	CERTIFICATES	MFRS INSTRUCTIONS	MFRS FIELD REPORT	OPERATION & MAINTENANCE DATA	CLOSEOUT SUBMITTALS	FOR INFORMATION ONLY	GOVERNMENT APPROVAL
01800	1.2.2	NOTIFICATION OF MAINTENANCE ACTIVITIES												●	
01800	1.2.3	ANNUAL INSPECTION AND MAINTENANCE REPORT						●						●	●
02120	1.3.1	PERMITS							●					●	
02120	1.3.2	SITE PREPARATION PLAN	●												●
02130	1.3.1	WASTE MANAGEMENT PLAN	●												●
02130	1.3.2	NOTICE OF NON-COMPLIANCE/NOTICE OF VIOLATIONS			●									●	
02130	1.3.3	TRANSPORT CERTIFICATE							●					●	
02130	1.3.4	ANNUAL AND BIENNIAL REPORTS						●							●
02130	1.3.5	EXCEPTION REPORTS						●							●
02130	1.3.6	SHIPPING DOCUMENTS AND PACKAGING CERTIFICATES							●						●
02130	1.3.7	CERTIFICATES OF DISPOSAL							●					●	
02130	1.3.8	DISPOSAL FACILITY NAME AND PERMIT	●												●
02230	1.3.1	SAMPLES OF PROPOSED FILL				●									●
02230	1.3.2	LABORATORY AND FIELD TEST RESULTS						●							●
02230	1.3.3	BACKFILL MATERIAL SOURCE AND CERTIFICATION							●						●
02230	1.3.4	LABORATORY CERTIFICATION CREDENTIALS							●						●
02270	1.3.1	PRODUCT LITERATURE			●									●	
02270	1.3.2	PERMITS							●						●
02270	1.3.3	EROSION CONTROL BLANKET CERTIFICATION							●						●
02273	1.3.1	BACKGROUND INFO/FORMATION AND COMPANY PROFILE			●									●	
02273	1.3.2	PRODUCT DATA AND SAMPLES				●		●	●					●	
02273	1.3.3	QUALITY CONTROL DATA			●									●	
02273	1.3.4	REFERENCE LIST			●									●	
02273	1.3.5	SHOP DRAWINGS		●										●	
02273	1.3.6	INSTALLATION SCHEDULE			●									●	

SUBMITTAL REGISTER											CONTRACT NUMBER				
TITLE AND LOCATION															
ROEBLING STEEL OU-5 - SUPERFUND SITE, FLORENCE TOWNSHIP, NEW JERSEY															
SECTION	PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL										CLASSIFICATION		
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02273	1.3.7	INSTALLATION INSTRUCTIONS								●				●	
02273	1.3.8	QUALITY CONTROL CERTIFICATES							●					●	
02276	1.3.1	GABION WALL DESIGN		●											●
02575	1.3.1	SAMPLES				●									●
02575	1.3.2	CERTIFIED MIX DESIGNS					●								●
02575	1.3.3	TEST RESULTS						●							●
02605	1.3.1	DRAWINGS		●											●
02605	1.3.2	SCHEDULE OF SECTION LENGTHS		●											●
02605	1.3.3	PROFESSIONAL ENGINEER CERTIFICATION							●					●	
02623	1.3.1	DRAWINGS		●											●
02821	1.3.1	FENCING		●											●
02821	1.3.2	MATERIAL CERTIFICATE							●					●	
02930	1.3.1	PRODUCT DATA			●									●	
02930	1.3.2	SAMPLES				●									●
02930	1.3.3	CERTIFICATE OF COMPLIANCE							●						●
02930	1.3.4	MAINTENANCE RECORD										●			●
02950	1.3.1	INFILTRATION AREA PLANTING PLAN		●											●
02950	1.3.2	PLANT AND SEED ESTABLISHMENT PERIOD			●										●
02950	1.3.3	NURSURY INSPECTION CERTIFICATES FOR PLANTING							●					●	
02950	1.3.4	PLANT STOCK CERTIFICATIONS							●					●	
02950	1.3.5	PLANT AND SEED MAINTENANCE INSTRUCTIONS									●				●
02950	1.3.6	PLANTING INSPECTION REPORT									●			●	

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE <i>(Read instructions on the reverse side prior to initiating this form)</i>					DATE		TRANSMITTAL NO.	
SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS <i>(This section will be initiated by the contractor)</i>								
TO:		FROM:		CONTRACT NO.		CHECK ONE: <input type="checkbox"/> THIS IS A NEW TRANSMITTAL <input type="checkbox"/> THIS IS A RESUBMITTAL OF TRANSMITTAL _____		
SPECIFICATION SEC. NO. <i>(Cover only one section with each transmittal)</i>		PROJECT TITLE AND LOCATION				CHECK ONE: THIS TRANSMITTAL IS <input type="checkbox"/> FOR INFO ONLY <input type="checkbox"/> APPROVAL		
ITEM NO.	DESCRIPTION OF ITEM SUBMITTED <i>(Type size, model, number / etc.)</i>	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. <i>(See instruction no. 8)</i>	NO. OF COPIES	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE	VARIATION <i>(See instruction No. 6)</i>	FOR ENGINEER USE CODE
				SPEC. PARA. NO.	DRAWING SHEET NO.			
a.	b.	c.	d.	e.	f.	g.	h.	i.
REMARKS					I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the Contract Drawings and specifications except as otherwise stated. <div style="text-align: center; margin-top: 20px;"> _____ NAME AND SIGNATURE OF CONTRACTOR </div>			
SECTION II - APPROVAL ACTION								
ENCLOSURES RETURNED <i>(List by Item No.)</i>			NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY			DATE		

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on the submittal register for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. A separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications. Also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal; letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. EPA's approving authority will assign action codes as indicated below in the space provided in Section I, column i for each item submitted. In addition, they will ensure enclosures are indicated and attached to the form prior to return to the Contractor. The Contractor will assign action codes as indicated below in Section I, column g, for each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A -- Approved as submitted.	E -- Disapproved (See attached).
B -- Approved, except as noted on drawings.	F -- Receipt acknowledged.
C -- Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX -- Receipt acknowledged, does not comply as noted with contract requirements.
D -- Will be returned by separate correspondence.	G -- Other (<i>Specify</i>)

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

SECTION 01351

SAFETY, HEALTH, AND EMERGENCY RESPONSE FOR CONTAMINATED SITES

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 This section specifies the requirements for submission of the Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP) as required by EM 385-1-1 for occupational and non-occupational exposure protection during handling of contaminated materials. The requirements shall apply to work performed in both “contaminated” and “clean” areas.

1.1.2 This section describes the responsibilities of the Contractor for safety, health, and emergency response. The Government is committed that the work performed under these specifications will be actively managed so as to:

1.1.2.1 Prevent injuries to employees or other persons.

1.1.2.2 Maintain employee exposures to health hazards well below the occupational limits established by the Occupational Safety and Health Administration (OSHA) and the American Conference of Governmental Industrial Hygienists (ACGIH).

1.1.2.3 Keep the exposure of area residents to air contaminants well below the levels established for general public exposure by OSHA, the United States Environmental Protection Agency (EPA), or the New Jersey Department of Environmental Protection (NJDEP).

1.1.2.4 Prevent increasing contaminant levels in soil, water, and sediment at or air near the Site.

Any disregard for the provisions of these safety and health requirements shall be deemed just and sufficient cause for termination of the contract without compromise or prejudice to the rights of the Contractor.

1.1.3 This section specifies the requirements for safety and occupational health for the protection of Contractor and Government personnel, property and resources.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of these standards, the revision in effect at the time of contract award shall apply.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH	Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices
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AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Class II	Safety Vest Standard
ANSI Z41.1	Safety Toe Footwear Requirements
ANSI Z87.1	Practice for Occupational and Educational Eye and Face Protection
ANSI Z88.2	Standard Practice for Respiratory Protection
ANSI Z89.1	Safety Requirements for Industrial Head Protection
ANSI Z358.1	Emergency Eyewash and Shower Equipment
ANSI Z590.3	Prevention through Design

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM F2412-05	Standard Test Methods for Foot Protection
ASTM F2413-05	Standard Specification for Performance Requirements for Foot Protection

CODE OF FEDERAL REGULATIONS (CFR)

10 CFR 19	Notices, Instructions and Reports to Workers: Inspection and Investigations
29 CFR 1904	Recording and Reporting Occupational Injuries and Illnesses
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 302	Designation, Reportable Quantities, and Notification
41 CFR 50	Safety and Health Standards for Federal Supply Contracts
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

UNITED STATES ARMY CORPS OF ENGINEERS ENGINEER MANUALS (EM)

EM 385-1-1 Safety and Health Requirements Manual

UNITED STATES ARMY CORPS OF ENGINEERS ENGINEER REGULATIONS (ER)

ER 385-1-92 Safety and Occupational Health Requirements for Hazardous, Toxic and
Radioactive Waste (HTRW) Activities

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA)

TED 01-00-015 OSHA Technical Manual

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub Occupational Safety and Health Guidance Manual for
No. 85-115 Hazardous Waste Site Activities

NIOSH Manual of Analytical Methods, 4th. Ed., Vol. 1 and 2

NEW JERSEY ADMINISTRATIVE CODE (N.J.A.C.)

N.J.A.C. 7:1E Rules on Discharge of Petroleum and other Hazardous Substances

N.J.A.C. 7:26E Technical Requirements for Site Remediation

N.J.A.C. 7:29 Noise Control

N.J.A.C. 7:26 Solid and Hazardous Waste Management Regulations

N.J.A.C. 8:60 Health

N.J.A.C. 12:120 Labor

1.3 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals with an “FIO” designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES. The Contractor shall maintain a copy of all documents described in this section; these shall be onsite at all times during construction.

1.3.1 Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP); SD-01 Pre-Construction Submittals; GA

The Contractor shall submit the APP/SSHP to the Government at least 21 calendar days prior to the Pre-Construction Conference. The SSHP shall be attached to the APP as an appendix. The APP/SSHP must be approved by the Government prior to commencement of field activities. The APP/SSHP shall address in

detail the issues listed in this section under Paragraph 1.6 – ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN.

1.3.2 Work Zone and Decontamination Facility Drawings; SD-02 Shop Drawings; GA

The Contractor shall submit the drawings showing the Exclusion Zone, Contamination Reduction Zone and Support Zone boundaries and decontamination facility area for the Government's approval prior to commencement of field activities.

1.3.3 Weekly Safety and Accident Reports; SD-03 Product Data; FIO

1.3.3.1 Weekly Safety Report (within one week).

1.3.3.2 Mishap Notification

Any accident that has, or appears to have, any of the consequences listed below shall be immediately reported to the GDA. These accidents shall be investigated in depth to identify all causes and to recommend hazard control measures. The GDA shall immediately notify the Site Safety and Health Officer (SSHO) when any of these occurs and subsequently follow-up with official accident reports as prescribed by regulation.

- Property damage of \$500,000 or more
- A fatal injury/illness
- A permanent, totally disabling injury/illness
- A permanent, partial disabling injury/illness
- Inpatient hospitalization of three or more employees from a single occurrence
- Fatal injury or 1 or more persons are hospitalized as inpatients as a result of a single occurrence.

The following recordable mishaps are to be reported to the GDA within 24-hours after notification from the affected employee:

- Property damage of \$5,000 to \$500,000
- One or more days away from work
- Medical treatment greater than first aid
- Restrictive injuries
- Transfer injuries

1.3.3.3 Mishap Report.

In addition to the preliminary notification timelines listed above, the Contractor shall conduct an accident investigation to establish the root cause(s) of recordable mishaps, complete USACE Accident Report Form 3394, and provide the report to the Government within 7 calendar days of the accident. The Government will provide copies of any required or special forms.

1.3.4 Activity Hazard Analyses; SD-03 Product Data; GA

The Contractor shall submit an Activity Hazard Analysis for each major phase of work.

1.3.5 Exposure and Air Monitoring Data; SD-03 Product Data; FIO

The Contractor shall submit the Exposure and Air Monitoring Data required by this section.

1.3.6 Personnel Health and Safety Certificates; SD-07 Certificates; FIO

The Contractor shall submit the following information to the Government for approval at or prior to the Pre-Construction Conference:

1.3.6.1 Initial medical certifications for all field personnel.

1.3.6.2 Number of the Contractor's employees and training certificates for all field personnel who have completed the safety and health course required by OSHA 29 CFR 1910.120.

1.3.6.3 Respirator fit-test certificates for all field personnel.

1.3.7 Safety and Health Manager Statements; SD-07 Certificates; FIO

The Contractor shall submit the following information to the Government prior to mobilizing to the Site:

1.3.7.1 An affidavit signed by the SHM indicating the Contractor's commitment to follow the SSHP.

1.3.7.2 A statement indicating that personnel who will enter the work zone understand that they are working on a hazardous waste site/operations and are trained and qualified in compliance with 29 CFR 1910.120.

1.3.8 Certificate of Worker/Visitor Acknowledgement; SD-07 Certificates; FIO

The Contractor shall submit a Certificate of Worker/Visitor Acknowledgement for each worker or visitor onsite in accordance with the requirements of this section.

1.3.9 Project Safety and Health Phase-Out Report; SD-11 Closeout Submittals; FIO

The Project Safety and Health Phase-Out Report shall be signed by the project SHM and submitted to the Government after completing project site work. The report shall conform to the requirements of Paragraph 1.43 – SAFETY AND HEALTH PHASE-OUT REPORT.

1.4 REGULATORY REQUIREMENTS

Work performed under this contract shall comply with EM 385-1-1, OSHA requirements in 29 CFR 1910 and 29 CFR 1926, especially OSHA's Standards 29 CFR 1926.65 and 29 CFR 1910.120, and state-specific OSHA requirements where applicable in NJAC 7:1C, NJAC 7:26E, NJAC 7:29, NJAC 7:13, NJAC 7:26G, NJAC 16:49, and NJAC 16:25A and all applicable federal, state, and local safety and occupational health laws and regulations. This includes, but is not limited to:

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS

29 CFR 1910	Section 120	“Hazardous Waste Site Operations and Emergency Response”
	Section 1000	“Air Contaminants”
	Section 38	“Employee Emergency Plans and Fire Prevention Plans”
	Section 95	“Noise”
	Section 132	“General Requirements”
	Section 133	“Eye and Face Protection”
	Section 134	“Respiratory Protection”
	Section 135	“Head Protection”
	Section 136	“Foot Protection”
	Section 137	“Electrical Protective Equipment”
	Section 146	“Permit Required Confined Spaces”
	Section 147	“The Control of Hazardous Energy”
29 CFR 1926	Section 21	“Safety Training and Education”
	Section 59	“Hazard Communication”
	Section 65	“Hazardous Waste Site Operations and Emergency Response”
	Section 602	“Material Handling Equipment”
	Subpart E	“Personal Protective and Life Saving Equipment”
	Subpart F	“Fire Protection and Prevention”
10 CFR 19		“Notices, Instructions, and Reports to Workers: Inspections and Investigations”

Matters of interpretation of standards shall be submitted to the Government for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 MEETINGS

1.5.1 Pre-Construction Safety Conference

1.5.1.1 Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the Pre-Construction Conference. This includes the project superintendent, safety and health manager, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP including the Activity Hazard Analyses (AHAs) and special plans, programs and procedures associated with the APP.

1.5.1.2 The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures, and a list of anticipated AHAs that will be developed and implemented during performance of the contract. The list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Government as to which phases will require AHAs. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

1.5.1.3 Deficiencies in the submitted APP will be brought to the attention of the Contractor at the Pre-Construction Conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

1.5.2 Daily Safety Meetings

Daily safety meetings shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractor's Daily Quality Control Report.

1.6 ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN

The Contractor shall develop and implement an SSHP that shall be attached to the APP as an appendix. The APP/SSHP shall address all occupational safety and health hazards associated with the remedial action work. The APP/SSHP shall cover each SSHP element in Section 33.B.02 of EM 385-1-1 and each APP element in Appendix A of EM 385-1-1. There are overlapping elements in Section 33.B.02 and Appendix A of EM 385-1-1. SSHP appendix elements that overlap with APP elements need not be duplicated in the APP/SSHP provided each safety and occupational health issue receives adequate attention and is documented in the APP/SSHP. The APP/SSHP is a dynamic document, subject to change as project operations and execution change. The APP/SSHP will require modification to address changing and previously unidentified health and safety conditions. It is the Contractor's responsibility to ensure that the APP/SSHP is updated accordingly. Amendments to the APP/SSHP shall be submitted to the Government as the APP/SSHP is updated. The APP/SSHP shall be resubmitted to the Government annually for review. The APP/SSHP will contain all updates.

The Government considers the Prime Contractor to be the "controlling authority" for site safety and health for all work performed by the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out.

1.6.1 Acceptance and Modifications

Prior to submittal, the APP/SSHP shall be signed and dated by the SHM. The APP/SSHP shall be submitted to the Government for approval. Deficiencies in the APP/SSHP will be discussed at the Pre-Construction Conference, and the APP/SSHP shall be revised to correct the deficiencies and resubmitted for acceptance. Onsite work shall not begin until the plan has been approved and accepted by the Government. A copy of the written APP/SSHP shall be maintained onsite. As work proceeds, the APP/SSHP shall be adapted to new situations and new conditions. Changes and modifications to the accepted APP/SSHP shall be made with the knowledge and concurrence of the SHM, the Site Superintendent, and the Government. Should any unforeseen hazard become evident during the performance of the work, the SSHO shall bring such hazard to the attention of the SHM, the Site Superintendent, and the Government, both verbally and in writing, for prompt resolution. In the interim, necessary action shall be taken to re-establish and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted APP/SSHP shall be cause for stopping work until the matter is rectified.

1.6.2 Availability

The APP/SSHP shall be made available in accordance with 29 CFR 1910, Section 120 (b) (1) (v) and 29 CFR 1926, Section 65 (b) (1) (v).

1.7 DISPLAY OF SAFETY INFORMATION

Within 5 calendar days after notice to proceed, the Contractor shall erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, Section 01.A.07.

1.8 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

1.8.1 Project Site Conditions

Project site conditions are detailed in SECTION 01010 – SUMMARY OF WORK.

1.8.2 Plan Requirements

The APP/SSHP shall include a site description and contamination characterization section that addresses the following elements:

1.8.2.1 Description of site location, topography, size and past uses of the Site.

1.8.2.2 A list of contaminants that may present occupational safety and health hazards. This list shall be created by evaluating the analytical results in this section and by researching sources of information from past site investigation activities. Chemical names, concentration ranges, affected media, locations onsite and estimated quantities/volumes to be impacted by site work shall be included if known. The contamination characterization shall be reviewed and revised if new chemicals are identified as work progresses.

1.9 HAZARD/RISK ANALYSIS

The APP/SSHP shall include a systematic safety and health hazard/risk analysis for each site task and operation to be performed. The hazard/risk analysis shall, as described in ANSI Z590.3, Prevention through Design, provide the information necessary for determining safety and health procedures, equipment, and training to protect onsite personnel, the environment, and the public. Available site information shall be reviewed when preparing the “Hazard/Risk Analysis” section of the APP/SSHP. The following elements, at a minimum, shall be addressed.

The Contractor shall provide all equipment, materials, and personnel necessary to protect onsite personnel and members of the public from injury or exposure to physical, chemical, or biological hazards. The Contractor shall operate a program of protective equipment maintenance in accordance with the manufacturer’s specifications. All equipment shall be NIOSH-approved, if applicable. The Government will reject the use of equipment if, in its opinion, it provides less protection than that specified in the APP/SSHP.

1.9.1 Site Tasks and Operations

The APP/SSHP shall include a comprehensive section that addresses the tasks and objectives of the site operations and the logistics and resources required to complete those tasks and objectives. Based on the type of remediation required, the contractor shall set worker PPE levels based on the list of anticipated major site tasks and operations in Table 01351-1.

TABLE 01351-1 TASK/SPECIFIC LEVELS OF PROTECTION

TASK	LEVEL OF PROTECTION IN EXCLUSION ZONE (to be developed by contractor)
Mobilization	
Site Preparation/Clearing	Initial: Contingency:
Soil erosion and sediment control measures	Initial: Contingency:
Grading and cover installation	Initial: Contingency:
Installation of access road to Slag Area	Initial: Contingency:
Fence relocation, installation, and expansion	Initial: Contingency:
Protection of selected trees within the revetment	Initial: Contingency:

Decontamination of Tools
and Equipment

Initial:
Contingency:

Site restoration, including installation of topsoil/seeding

Demobilization and long-term inspection and maintenance

An explanation of the levels of personal protective equipment is included in Paragraph 1.13.

1.9.2 Hazards

The following potential hazards may be encountered during site work. These are not complete lists; therefore, they shall be expanded and/or revised as necessary during preparation of the APP/SSHP.

1.9.2.1 Physical Hazards

The Hazard/Risk Analysis section of the APP/SSHP shall describe the physical hazards associated with anticipated site operations. These include, but are not limited to: heavy equipment operations on ground surface; contaminant handling; slips, trips, and falls; etc.

1.9.2.2 Chemical Hazards

The Hazard/Risk Analysis section of the APP/SSHP shall describe the chemical, physical and toxicological properties of contaminant sources and pathways of employee exposure, anticipated onsite and offsite exposure levels, and regulatory (including federal, state and local) or recommended protective exposure standards.

1.9.2.3 Physical Agents

The APP/SSHP shall evaluate hazards associated with noise and heat/cold stress.

1.9.2.4 Biological Hazards

Potential hazards associated with poisonous plants, insects, and animals shall also be evaluated in the APP/SSHP.

1.9.3 Action Levels

1.9.3.1 General

Current NIOSH, or other applicable exposure standards and guidelines, shall be utilized in developing action levels. The action levels and required actions (engineering controls, changes in PPE, etc.) shall be presented in the APP/SSHP in both text and tabular form. Minimum acceptable action levels and actions to be taken in the event of exceedance appear in Table 01351-2. Action levels shall be established for the following situations, at a minimum.

1.9.3.1.1 Implementation of engineering controls and work practices.

- 1.9.3.1.2 Upgrade or downgrade in level of personal protective equipment.
- 1.9.3.1.3 Work stoppage and/or emergency evacuation of onsite personnel.
- 1.9.3.1.4 Prevention and/or minimization of public exposures to hazards created by site activities.

TABLE 01351-2 MINIMUM ACCEPTABLE ACTION LEVELS IN WORKER BREATHING ZONE

CONTAMINANT	LEVEL	ACTION TO BE TAKEN ^a
ACTIVE WORK AREA		
Dust in air (total above background)	150 µg/m ³	Engineering controls (i.e., wet suppression)
Noise	85 dBA	Implement engineering or administrative control

Notes:

^a Changes in these initial action levels may be required during the course of this project but will only occur with the written approval of the Government.

Abbreviations:

dBA – decibels (A-weighted)

1.10 ACTIVITY HAZARD ANALYSIS

Prior to beginning each major phase of work, an Activity Hazard Analysis (AHA) shall be prepared by the Contractor performing that work and submitted for review and acceptance. The AHA shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The format shall be in accordance with EM 385-1-1, Section 1. A major phase of work is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new subcontractor or work crew is to perform. The analysis shall define the activities to be performed and identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the activity hazard analysis has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the Government. The activity hazard analysis shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations, with the concurrence of the SHM, the Site Superintendent, and the Government. Activity hazard analyses shall be attached to and become a part of the APP/SSHP. Each Activity Hazard Analysis shall comply with 29 CFR 1910, Subpart I, “Personal Protective Equipment”.

1.11 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

An organizational structure shall be developed that sets forth lines of authority, responsibilities, and communication procedures concerning site safety, health, and emergency response. This organizational structure shall cover management, supervisors and employees of the Contractor and subcontractors. The structure shall include the means for coordinating and controlling work activities of subcontractors and suppliers. The APP/SSHP shall include a description of this organizational structure as well as qualifications and responsibilities of each of the individuals listed below. The Contractor shall obtain the Government's acceptance before replacing any member of the Safety and Health Staff.

The safety and health organization shall be identified separately from the project's operations organizations in order to maintain the appropriate degree of independence from day-to-day activities. This independence is necessary to ensure proper implementation of the safety and health plan. The project manager shall be responsible for safety and health on the project including providing the proper and adequate personnel, materials, and resources to implement the safety and health program. Requests for replacement of any member of the Safety and Health Staff shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

1.11.1 Site Superintendent

A Site Superintendent, who has responsibility to implement the APP/SSHP and the authority to direct work performed under this contract and verify compliance, shall be designated.

1.11.2 Safety and Health Manager

1.11.2.1 Qualifications

The services of a Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene shall be utilized. The name, qualifications (education summary and documentation), and work experience summary shall be included in the APP/SSHP. The SHM shall have the following additional qualifications:

1.11.2.1.1 A minimum of three years of experience in developing and implementing safety and health programs at hazardous waste sites.

1.11.2.1.2 Documented experience in supervising professional and technician-level personnel.

1.11.2.1.3 Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques.

1.11.2.1.4 Documented experience in the development of PPE programs and conducting PPE hazard evaluations for the types of activities and hazards likely to be encountered on this project.

1.11.2.1.5 Working knowledge of state and federal occupational safety and health regulations.

1.11.2.2 Responsibilities

The SHM shall:

- 1.11.2.2.1 Be responsible for the development, implementation, oversight, and enforcement of the APP/SSHP.
- 1.11.2.2.2 Sign and date the APP/SSHP prior to submittal.
- 1.11.2.2.3 Conduct initial site-specific training.
- 1.11.2.2.4 Be present onsite during the first day of remedial activities and at the startup of each new major phase of work.
- 1.11.2.2.5 Visit the Site as needed and at least once per month for the duration of activities to audit the effectiveness of the APP/SSHP. Any safety and health deficiencies shall be noted in writing with action items identified and assigned so as to resolve deficiencies.
- 1.11.2.2.6 Be available for emergencies.
- 1.11.2.2.7 Provide onsite consultation as needed to ensure the APP/SSHP is fully implemented.
- 1.11.2.2.8 Coordinate any modifications to the APP/SSHP with the Site Superintendent, the SSHO, and the Government.
- 1.11.2.2.9 Provide continued support for upgrading/downgrading of the level of personal protection.
- 1.11.2.2.10 Be responsible for evaluating air monitoring data and recommending changes to engineering controls, work practices, and PPE.
- 1.11.2.2.11 Review accident reports and results of daily inspections.
- 1.11.2.2.12 Serve as a member of the Contractor's quality control staff.

1.11.3 Site Safety and Health Officer (SSHO)

1.11.3.1 Qualifications

An individual and one alternate shall be designated the SSHO. The name, qualifications (education and training summary and documentation), and work experience of the SSHO and alternate shall be included in the APP/SSHP. The SSHO shall have the following qualifications:

- 1.11.3.1.1 A minimum of two years of experience in implementing safety and health programs at hazardous waste sites where level C PPE was required.
- 1.11.3.1.2 Documented experience in construction techniques and construction safety procedures.
- 1.11.3.1.3 Working knowledge of federal and state occupational safety and health regulations.

1.11.3.1.4 Specific training in personal and respiratory protective equipment, confined space entry, and in the proper use of air monitoring instruments and air sampling methods.

1.11.3.1.5 Completion of 30 Hour Construction Safety and Health course compliant with OSHA Training Institute Guidelines.

1.11.3.1.6 Certified as having completed training in First Aid and CPR by a recognized organization such as the American Red Cross.

1.11.3.2 Responsibilities

The SSHO shall:

1.11.3.2.1 Assist and represent the SHM in onsite training and the day-to-day onsite implementation and enforcement of the accepted APP/SSHP. The SSHO shall report directly to the SHM.

1.11.3.2.2 Be assigned to the Site on a full-time basis for the duration of field activities. The SSHO shall have no duties other than safety- and health-related duties. If operations are performed during more than one work shift per day, a site SSHO shall be present for each shift.

1.11.3.2.3 Have authority to ensure site compliance with specified safety and health requirements, federal, state and OSHA regulations and all aspects of the APP/SSHP including, but not limited to, activity hazard analyses, air monitoring, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, spill containment program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log in accordance with 29 CFR 1904.

1.11.3.2.4 Have authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.

1.11.3.2.5 Consult with and coordinate any modifications to the APP/SSHP with the SHM, the Site Superintendent, and the Government.

1.11.3.2.6 Serve as a member of the Contractor's quality control staff on matters relating to safety and health.

1.11.3.2.7 Conduct accident investigations and prepare accident reports.

1.11.3.2.8 Conduct daily safety inspections and document safety and health findings in the Daily Safety Inspection Log and track noted safety and health deficiencies to ensure that they are corrected.

1.11.3.2.9 Conduct emergency response training which shall include the following: procedures, spill plans, firefighting plans, posting of emergency numbers, man overboard/abandon ship, and medical support.

1.11.3.2.10 Recommend corrective actions for identified deficiencies and oversee the corrective actions in coordination with site management and the SHM.

1.11.4 Occupational Physician

1.11.4.1 Qualifications

The services of a licensed physician, who is certified in occupational medicine by the American Board of Preventive Medicine, or who by necessary training and experience is Board-eligible, shall be utilized. The physician shall be familiar with the site hazards and the scope of this project. The medical consultant's name, qualifications, and knowledge of the Site's conditions and proposed activities shall be included in the APP/SSHP.

1.11.4.2 Responsibilities

The physician shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with: 29 CFR 1910, Section 120 (f); 29 CFR 1926, Section 65 (f); and Paragraph 1.14 – MEDICAL SURVEILLANCE.

1.11.5 Persons Certified in First Aid and CPR

At least two persons who are currently certified in first aid, CPR, and use of an automated external defibrillator by the American Red Cross or other approved agency shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section 1030. These persons may perform other duties but shall be immediately available to render first aid when needed.

1.12 TRAINING

The Contractor's training program for workers performing cleanup operations and who will be exposed to contaminants shall meet the following requirements.

1.12.1 General Hazardous Waste Operations Training

All personnel performing duties with potential for exposure to onsite contaminants shall meet and maintain the following 29 CFR 1910.120 and 29 CFR 1926.65 (e) training requirements.

1.12.1.1 40 hours of offsite hazardous waste instruction.

1.12.1.2 Three days actual field experience under the direct supervision of a trained, experienced supervisor.

1.12.1.3 Eight hours refresher training annually.

Onsite supervisors shall have an additional eight hours management and supervisor training as specified in 29 CFR 1910.120/29 CFR 1926.65 (e) (4).

The Contractor shall maintain, at the work site, documentation that shows that each onsite employee or subcontractor has completed a safety and health training course appropriate for his/her job function

and responsibility. The training certificates shall be current within 12 months of the start of work and remain up-to-date during work performance.

1.12.2 Pre-entry Briefing

Prior to commencement of onsite field activities, all site employees, including those assigned only to the Support Zone, shall attend a site-specific safety and health training session. This session shall be conducted by the SHM and the SSHO to ensure that all personnel are familiar with requirements and responsibilities for maintaining a safe and healthful work environment. Procedures and contents of the accepted APP/SSHP and Sections 01.B.02 and 33.B.02 of EM 385-1-1 shall be thoroughly discussed. Each employee shall sign a training log to acknowledge attendance and understanding of the training. The Government shall be notified at least five days prior to the initial site-specific training session so that Government personnel involved in the project may attend.

1.12.3 Periodic Sessions

Periodic onsite training shall be conducted by the SSHO at least weekly for personnel assigned to work at the Site during the following week. The training shall address safety and health procedures, work practices, any changes in the APP/SSHP, activity hazard analyses, work tasks, or schedule, results of the previous week's air monitoring, and review of safety discrepancies and accidents. Should an operational change affecting onsite field work be made, a meeting prior to implementation of the change shall be convened to explain safety and health procedures. Site-specific training sessions for new personnel, visitors, and subcontractors shall be conducted by the SSHO using the training curriculum outlines developed by the SHM. Each employee shall sign a training log to acknowledge attendance and understanding of the training.

1.12.4 Site-Specific Training

Site-specific training shall be documented in accordance with Section 01.B.02 of EM 385-1-1. The Contractor's SHM shall approve a site-specific training session for the Contractor and Government personnel scheduled to work onsite. This training may be given by the SSHO and shall consist of an initial safety and health briefing on the following information:

1.12.4.1 Names of personnel and alternates responsible for site safety and health.

1.12.4.2 Hazards present on the Site.

1.12.4.3 Hazard communications training.

1.12.4.4 Safe use of engineering controls and equipment onsite.

1.12.4.5 Selection, use, care, and maintenance of PPE.

1.12.4.6 Site control procedures, including log-in and log-out.

1.12.4.7 Site decontamination procedures.

1.12.4.8 Standard operating safety procedures.

1.12.4.9 Site emergency response contingency plan.

The SHM shall provide training as specified in 29 CFR 1910.146 for employees who are required to supervise, standby, or enter permit-required confined spaces. Persons involved in the transportation of hazardous materials shall be trained in accordance with 49 CFR 172 Subpart H.

1.13 PERSONAL PROTECTIVE EQUIPMENT

1.13.1 Site-Specific PPE Program

The Contractor's PPE Program shall comply with 29 CFR Part 1910.132 and 29 CFR Part 1910.120. Onsite personnel exposed to contaminants shall be provided with appropriate PPE. Components of levels of protection (C, D and modifications) must be relevant to site-specific conditions, including heat and cold stress potential and safety hazards. If respirators are deemed necessary for site work, only respirators approved by NIOSH shall be used. Protective equipment and clothing shall be kept clean and well-maintained. The PPE section of the APP/SSHP shall include site-specific procedures to determine PPE program effectiveness and for onsite fit-testing of respirators and cleaning, maintenance, inspection, and storage of PPE.

1.13.2 Levels of Protection

Operations under this contract may require work exposure to potentially hazardous materials. The Contractor shall, therefore, provide and ensure the wearing of all necessary PPE for all personnel onsite. All personnel entering the Work Zones shall don, at a minimum, level D PPE. The SHM shall establish and evaluate, as the work progresses, the levels of protection for each work activity. The SHM shall also establish action levels for upgrade or downgrade in levels of PPE. Protocols and the communication network for changing the level of protection shall be described in the SSHP. The PPE evaluation protocol shall address air monitoring results, potential for exposure, changes in site conditions, work phases, job tasks, weather, temperature extremes, individual medical considerations, etc.

1.13.2.1 Initial PPE Components

The following items constitute minimum protective clothing and equipment ensembles to be utilized during this project:

a. Level D – Work clothing, as dictated by the weather

- i. Safety (steel toe/shank) shoes or boots
- ii. Safety glasses, goggles, or face shield
- iii. Disposable, hooded, one-piece, full-body coveralls constructed of spun-bonded olefin or polypropylene fabrics (e.g. Tyvek or equivalent)
- iv. Hard hat
- v. Items from the Level D modified list, as required for tasks.

b. Modified Level D –

- i. Hard hat
- ii. Safety glasses, goggles, or face shield
- iii. Nitrile, neoprene or natural rubber gloves (when handling contaminated

- soils or water)
- iv. Gloves with cotton liners
- v. Hearing protection (where required)
- vi. Disposable boot covers of (minimum) 60 mil rubberized PVC

c. Level C –

- i. Full-facepiece, air purifying respirator equipped with filter cartridges approved by NIOSH for particulates.
- ii. Disposable, hooded, one-piece, full-body coveralls constructed of spun-bonded olefin or polypropylene fabrics (e.g. Tyvek or equivalent)
- iii. Nitrile, neoprene or natural rubber gloves (when handling contaminated soils or water)
- iv. Gloves with cotton liners
- v. Safety (steel toe/shank) shoes or boots (Boot cover: optional)

1.13.2.2 Initial Minimum Levels of PPE by Task

Based on available information, the initial minimum protective equipment requirements for each major task and operation as listed in Table 01351-1 shall be developed by the contractor. Available site information shall be reviewed and the list of tasks and operations and corresponding levels of protection shall be expanded and/or revised during preparation of the SSHP.

The Contractor shall downgrade its level of protection only when:

- a. The SSHO makes the change based on site activity, air monitoring of contaminant levels, and work place practices as specified in the SSHP; and
- b. The SHM approves the change, with the knowledge and approval of the Government.

Protective equipment shall meet the requirements of the regulations listed in Table 01351-3 when such equipment is required.

1.13.3 PPE for Government Personnel

Five clean sets of PPE and clothing (excluding air-purifying negative-pressure respirators and safety shoes, which will be provided by individual visitors), as required for entry into the Exclusion Zone and/or Contamination Reduction Zone, shall be available for use by the Government or official visitors. The items shall be cleaned, maintained and stored by the Contractor and clearly marked: "FOR USE BY GOVERNMENT ONLY." The Contractor shall provide basic training in the use and limitations of the PPE provided.

1.14 MEDICAL SURVEILLANCE

The Contractor's medical surveillance program for workers performing cleanup operations and who will be exposed to contaminants shall meet 29 CFR 1910.120 (f), 29 CFR 1926.65 (f), and the following requirements. The Contractor shall ensure that the Occupational Physician or the physician's designee performs the physical examinations and reviews examination results. Participation in the medical surveillance program shall be without cost to employees, without loss of pay and at a reasonable time and place.

1.14.1 Frequency of Examinations

Medical surveillance program participants shall receive medical examinations and consultations on the following schedule:

- a. Every 12 months.
- b. If and when the participant develops signs and symptoms indicating a possible overexposure due to an uncontrolled release of a hazardous substance on the Site.
- c. Upon termination or reassignment to a job where medical surveillance program participation is not required, unless his/her previous annual examination/consultation was less than 6 months prior to reassignment or termination.
- d. On a schedule specified by the Occupational Physician.

1.14.2 Content of Examinations

The physical examination/consultation shall verify the following information about the medical surveillance program participants:

- 1.14.2.1 Baseline health conditions and exposure history.
- 1.14.2.2 Allergies, sensitivity and susceptibility to hazardous substances exposure.
- 1.14.2.3 Ability to wear PPE inclusive of NIOSH-certified respirators under extreme temperature conditions.
- 1.14.2.4 Fitness to perform assigned duties.

1.14.3 Information Provided to the Occupational Physician

The Contractor shall provide the Occupational Physician with the following information for each medical surveillance program participant:

- 1.14.3.1 Information on the employee's anticipated or measured exposure.
- 1.14.3.2 A description of any PPE used or to be used.
- 1.14.3.3 A description of the employee's duties as they relate to the employee's exposures (including physical demands on the employee and heat/cold stress).
- 1.14.3.4 A copy of 29 CFR 1910, Section 120, or 29 CFR 1926, Section 65.
- 1.14.3.5 Information from previous examinations not readily available to the examining physician.
- 1.14.3.6 A copy of Section 5 of NIOSH Pub No. 85-115.
- 1.14.3.7 Information required by 29 CFR 1910, Section 134.

1.14.4 Physician's Written Opinion

Before work begins, a copy of the physician's written opinion for each employee shall be obtained and furnished to the SHM and the employee. The opinion shall address the employee's ability to perform hazardous remediation work and shall contain the following:

- 1.14.4.1 The physician's verification of the employee's fitness to perform duties as well as recommended limitations upon the employee's assigned work and/or PPE usage.
- 1.14.4.2 The physician's opinion about increased risk to the employee's health resulting from work.
- 1.14.4.3 A statement that the employee has been advised about the results of the examination.
- 1.14.5 Employee Certificates

Employee certificates shall be provided for each worker performing cleanup operations with potential for contaminant-related occupational exposure. Employee certificates shall be signed by the SHM and the Occupational Physician indicating that the workers meet the contract requirements for training and medical surveillance.

TABLE 01351-3 OSHA STANDARDS FOR USE OF PPE

Type of Protection	Regulation	Source
General	29 CFR Part 1910.132	41 CFR Part 50-204.7 General Requirements for Personal Protective Equipment
	29 CFR Part 1910.1000	41 CFR Part 50-204.50 except for Table Z-2, the source of which is ANSI Z3 Series(*)
	29 CFR Part 1910.1001 – 1045	OSHA Rulemaking
Hazard Communication	29 CFR Part 1910.1200	OSHA
Eye and Face	29 CFR Part 1910.133	ANSI Z87.1(*) Eye and Face Protection
Noise	29 CFR Part 1910.95	41 CFR Part 50-204.10 and OSHA Rulemaking
Respiratory	29 CFR Part 1910.134	ANSI Z88.2(*) Standard Practice for Respiratory Protection
Head	29 CFR Part 1910.135	ANSI Z89.1(*) Safety Requirement for Industrial Head Protection
Foot	29 CFR Part 1910.136	ANSI Z41.1(*) Men's Safety Toe Footwear
Hand	29 CFR Part 1910.138	ANSI/International Safety Equipment Association (ISEA) 105(*) American National Standard for Hand Protection Selection Criteria
(*) = Latest version.		

1.15 EXPOSURE MONITORING PROGRAM

1.15.1 General

1.15.1.1 The SHM shall prepare and implement an exposure monitoring program to assess safety and health hazards and airborne levels of hazardous substances in order to ensure proper selection of engineering controls, work practices and PPE for affected site personnel. The Contractor shall include action levels for upgrading/downgrading PPE in the program. The Contractor shall monitor the chemicals listed in 1.15.2.1.

1.15.1.2 The Contractor shall document, in the site log or site files, the regular calibration of each instrument used. Only individuals trained to operate this equipment will do so.

1.15.1.3 The following publications define terms and establish procedures discussed in this specification. These publications are incorporated into this specification by reference:

- a. Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists (ACGIH) (current edition)
- b. Manual of Analytical Methods, 4th. Ed., Vol. 1 and 2, National Institute for Occupational Safety and Health (NIOSH)
- c. OSHA Technical Manual, U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)
- d. Air Contaminants - Permissible Exposure Levels, 29 CFR 1910.1000

1.15.1.4 Equipment utilized for air monitoring or sampling in accordance with this section shall be calibrated before and after each use and maintained as per specified methods, manufacturer's recommendations, and good industrial hygiene practices.

1.15.2 Real-Time Air Monitoring

1.15.2.1 The Contractor shall furnish and maintain real-time air monitoring equipment and all necessary calibration/audit equipment and supplies to detect and evaluate respirable dust. All equipment shall be intrinsically safe.

1.15.2.2 The Contractor shall perform real-time air monitoring for an adequate period prior to commencement of work to establish baseline conditions for respirable dust in the exclusion zone.

Respirable dust will be established based on an 8-hour sample.

The Contractor shall provide monitoring during active cleanup operations onsite, near each active work zone. This real-time air monitoring is required during movement, staging or loading of potentially contaminated soils and/or handling of contaminated liquids. Real-time air monitoring shall also be performed adjacent to the Exclusion Zones. This monitoring shall be performed in the breathing zone of the highest-risk employee in the Exclusion Zone.

1.15.2.3 Onsite monitoring frequency for total respirable dust shall be every 30 minutes or less during onsite waste handling activities and at intervals consistent with the Contractor's SSHP during all other activities to limit personal exposure.

1.15.2.4 See Table 01351-2 for minimum acceptable action levels under the Contractor's SSHP and responses to their exceedance. The Contractor is responsible for analyzing specific project circumstances and requirements and developing appropriate final action levels and responses. Action levels must be approved by the Government.

1.15.2.5 A data sheet shall be developed by the SHM and implemented by the SSHO upon which the following real-time monitoring data will be recorded:

1.15.2.5.1 Date and time of monitoring.

1.15.2.5.2 Air monitoring location.

1.15.2.5.3 Instrument, model number, serial number.

1.15.2.5.4 Calibration/background levels.

1.15.2.5.5 Results of monitoring.

1.15.2.5.6 Safety and Health Specialist/Industrial Hygienist Technician signature.

1.15.2.5.7 Interpretation of the data and any further recommendations by the SHM or the SSHO in consultation with the SHM.

1.15.2.10 The person conducting the monitoring must sign and date the data sheets as they are filled in. The SSHO, as appropriate, shall sign and date the data sheets weekly after their review. All measured air concentrations and exposure durations shall be recorded. Records of these exposures shall be placed in the employee's permanent medical files.

1.15.2.11 Monitoring results shall be provided to the Government following each site scan that indicates concentrations in excess of the action levels. The levels will be documented in writing by the end of each work day with three copies provided.

1.16 HEAT AND COLD STRESS MONITORING AND MANAGEMENT

The Contractor shall document in the APP/SSHP and implement the procedures and practices in Section 06.J in EM 385-1-1 to monitor and manage heat stress.

1.17 SPILL AND DISCHARGE CONTROL

Written spill and discharge containment/control procedures shall be developed and implemented by the Contractor as part of the APP/SSHP. These procedures shall address operational fluid, hazardous wastes, material handling equipment, and appropriate procedures for drum and container handling, opening,

sampling, shipping, and transport. These procedures shall describe prevention measures, such as spill control measures and material to be used (e.g. gravel, amendment), location of the spill control material, PPE required to clean up spills, disposal of contaminated material, and who is responsible to report the spill. Storage of contaminated material or hazardous materials shall be appropriately bermed, diked and/or contained to prevent any spillage of material on uncontaminated soil/sediment.

The Contractor shall respond to any spill of hazardous substances (as designated in 40 CFR 302), or pollutant or contaminant that is in custody or care of the Contractor, pursuant to this contract. Response shall be implemented within one hour, or as soon as practicable, following any accident or release of debris, as directed by the Government. Any direction from the Government concerning a spill or release shall not be considered a change under the contract. The Contractor shall comply with all applicable requirements of federal, state, or local laws or regulations regarding any spill incident.

If the spill or discharge is reportable, and/or human health or the environment is threatened, the National Response Center, the state, and the Government shall be notified as soon as possible. Notification of the accident shall include location of the accident, resultant damage or injury, person(s) involved, probable cause, amount of waste spilled, and any other pertinent information concerning the accident.

1.18 MATERIALS TRANSFER SAFETY

Liquids and residues shall be removed from the tanks using explosion-proof or air-driven pumps. Pump motors and suction hoses shall be bonded to the tank and grounded to prevent electrostatic ignition hazards. Use of a hand pump will be permitted to remove the last of the liquid from the bottom of the tanks. If a vacuum truck is used for removal of liquids or residues, the area of operation for the vacuum truck shall be vapor-free. The truck shall be located upwind from the tank and outside the path of probable vapor travel. The vacuum pump exhaust gases shall be discharged through a hose of adequate size and length downwind of the truck and tank area. Vacuum truck operating and safety practices shall conform to API Publication 2219. Tank residues shall be collected in drums, tanks, or tank trucks labeled according to 49 CFR 171 and 49 CFR 172 and disposed of as specified. After the materials have been transferred and the tanks have been exposed, fittings and lines leading to the tanks shall be disconnected and drained of their contents. The contents of the lines shall not spill to the environment during cutting or disconnecting of tank fittings. Materials drained shall be transferred into US Department of Transportation (DOT)-approved drums for storage and/or transportation. Only non-sparking or non-heat-producing tools shall be used to disconnect and drain or to cut through tank fittings. Electrical equipment (e.g., pumps, portable hand tools, etc.) used for tank preparation shall be explosion-proof. Following cutting or disconnecting of the fittings, openings leading to the tanks shall be plugged.

1.19 DRUM AND CONTAINER HANDLING

Procedures and precautions for the handling, storage, and disposal of encountered drums and containers will be specified in the APP/SSHP, and shall comply with NJDEP requirements.

1.20 CONFINED SPACE ENTRY PROCEDURES

All tanks shall be considered confined spaces as defined by OSHA 29 CFR 1926. The Contractor will be required to provide confined space entry procedures in compliance with 29 CFR 1910.146, "Permit-Required Confined Spaces."

1.21 IGNITION SOURCES

Refer to Paragraph 1.22, Fire Protection and Prevention, NFPA 241 and EM 385-1-1, Section 9. A list of ignition sources shall be made and procedures documented to prevent fire as part of the pre-emergency planning. All sources of ignition shall be prohibited within 50 feet of operations with a potential fire hazard. Such areas shall be conspicuously and legibly posted: "NO SMOKING, MATCHES, OR OPEN FLAME." Sufficient clearance and shielding shall be provided around heat sources to avoid ignition of combustible materials.

1.22 FIRE PROTECTION AND PREVENTION

Every member of the site team shall be responsible to observe and report fires and conditions that could lead to fires. The Contractor shall observe the fire prevention and protection requirements described in EM-385-1-1. Those requirements include:

1.22.1 The Contractor shall not use fires or open flame devices.

1.22.2 The Contractor shall prohibit smoking within the Exclusion Zone.

1.22.3 The Contractor shall place fire extinguishers, rated at least 1-A:10-B:C, within the Exclusion Zone. Another fire extinguisher shall be placed in the Support Zone.

1.22.4 The Contractor shall inspect and tag all fire extinguishers on a monthly basis per the requirements of NFPA 10.

1.22.5 Contractor personnel will fight fires onsite that cannot be controlled through the use of extinguishers only if the Contractor has designated and trained a fire brigade, as described in OSHA Standard 29 CFR 1910.156 and 29 CFR 1926 Subpart F. Otherwise, Contractor personnel shall quickly evacuate the Site and notify the appropriate authorities.

1.23 ELECTRICAL SAFETY

Electrical installations and appliances used by the Contractor shall meet applicable 2017 National Electrical Code specifications. All electrical devices utilized by the Contractor or subcontractors on this project shall be grounded and utilize ground fault circuit interrupter (GFCI) protected outlets.

1.24 Intrusive Activities

The Contractor shall identify all buried utility lines within the work zones and take action to protect them before digging near them. Prior to starting site preparation work for the Contractor shall obtain utility clearance using the NJ One Call system, to avoid disturbing buried utilities. The contractor shall perform a geophysical survey to locate potential underground structures and utilities.

1.25 GUARDING OF MACHINERY AND EQUIPMENT

The Contractor shall secure their equipment onsite at the end of each workday. The Site shall have 24-hour security in accordance with SECTION 01540 – SECURITY.

1.26 LOCKOUT/TAGOUT

This shall be performed by competent employees only. Before an employee performs any servicing or maintenance on a system where the unexpected energizing, start up, or release of kinetic or stored energy could occur and cause injury or damage, the system shall be isolated in accordance with the requirements of EM 385-1-1, Section 12. Hazardous energy control procedures shall be implemented for the protection of personnel and resources.

1.27 FALL PROTECTION

The Contractor shall provide fall protection measures in accordance with EM 385-1-1, Section 21.

1.28 HAZARD COMMUNICATION

Refer to subsection 1.36.3 of this section. A hazard communication plan shall be prepared as part of pre-emergency planning.

1.29 ILLUMINATION

The Contractor shall provide lighting in accordance with EM 385-1-1, Section 7.

1.30 SANITATION

The Contractor shall provide a sanitary environment in accordance with EM 385-1-1, Section 2.

1.31 HEARING CONSERVATION

The Contractor shall evaluate the workplace for noise hazards initially and regularly during the course of work. When necessary, the Contractor shall make hearing protection available to all personnel involved with equipment operation.

1.32 SIGNS AND LABELS

Refer to SECTION 01580 – SIGNS.

1.33 DUST CONTROL

Dust control shall be used throughout the work at the Site and offsite and no visible dust emission shall be present. Dust control measures shall be included in the APP/SSHP. The APP/SSHP will identify materials, equipment, and methods to be used to control dust during project operations. The SSHO shall ensure that dust suppression practices are effective and being utilized. At a minimum, the following provisions shall be incorporated into the dust control section of the APP/SSHP.

1.34.1 The Contractor shall use water-based dust-suppressing agent to prevent the creation and dispersion of dust. The Contractor shall avoid methods that generate slippery conditions or sticky mud.

1.34.2 Trucks in which the rubble and contaminated debris are carried shall be covered and sealed to control dust releases, with a double, positive locking mechanism on the tailgates.

1.34.3 The SSHO shall ensure that dust suppression practices are effective and are being utilized. Periodic and frequent visual surveillance shall be conducted at the active work site along transportation routes. No visible dust emission shall be present.

1.35 SEVERE STORM PLAN

The Contractor shall develop a contingency plan for severe weather as part of the APP. In the event of a severe storm warning, the Contractor must:

1.35.1 Secure outside equipment and materials and place materials that could be damaged in protected areas. All equipment and materials shall be stored outside of the Flood Hazard Area limits.

1.35.2 Check the surrounding area for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.

1.35.3 Ensure that temporary erosion controls are adequate.

1.36 SITE CONTROL MEASURES

In order to prevent the spread of contamination and control the flow of personnel, vehicles, and materials into and out of work areas, site control measures shall be established and described in the APP/SSHP. The APP/SSHP shall describe site control measures similar to those described in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. The APP/SSHP shall describe the methodology to be used by the SHM and SSHO in determining work zone designations and their modifications, and procedures to limit the spread of contamination. The APP/SSHP shall include procedures for the implementation and enforcement of safety and health rules for all persons on the Site, including employers, employees, outside contractors, the Government, and visitors.

1.36.1 Work Zones

Initial anticipated work zone boundaries (Exclusion Zone including restricted area; Contamination Reduction Zone; and Support Zone) and access points shall be established, and the boundary delineations shall be included on the site drawings as a part of the APP/SSHP. Delineation of work zone boundaries shall be based on the contamination characterization data and the hazard/risk analysis to be performed as described in Paragraph 1.9 – HAZARD/RISK ANALYSIS. As work progresses and field conditions are monitored, work zone boundaries may be modified with approval from the Government. Work zones shall be clearly identified and marked in the field (using fences, tape, signs, etc.). A site map, showing work zone boundaries and locations of decontamination facilities, shall be posted in the onsite office. Work zones shall consist of the following:

1.36.1.1 Exclusion Zone (EZ): The EZ is the area where hazardous contamination is either known or expected to occur and the greatest potential for exposure exists. Entry into this area shall be controlled and exit may only be made through the Contamination Reduction Zone.

1.36.1.2 Contamination Reduction Zone (CRZ): The CRZ is the transition area between the Exclusion Zone and the Support Zone. The personnel and equipment decontamination areas shall be separate and unique areas located in the CRZ.

1.36.1.3 Support Zone (SZ): The SZ is defined as areas of the Site where workers do not have the potential to be exposed to hazardous substances or dangerous conditions resulting from hazardous waste operations. The SZ shall be secured against active or passive contamination. Site offices, parking areas, and other support facilities shall be located in the SZ.

1.36.2 Site Control Log

A log of personnel visiting, entering, or working on the Site shall be maintained. The log shall include the following: date, name, agency or company, time entering and exiting the Site, time entering and exiting the EZ (if applicable), and PPE utilized. Before visitors are allowed to enter the CRZ or EZ, they shall show proof of current training, medical surveillance and respirator fit testing (if respirators are required for the tasks to be performed), and shall fill out the Certificate of Worker or Visitor Acknowledgment. This visitor information, including date, shall be recorded in the log.

1.36.3 Communications

The APP/SSHP shall identify the method by which Contractor personnel will communicate in the event of an emergency. Communications with the office trailer, if it is outside vocal range, will be by radio. Two-way radio communication shall be required during construction activity. Communications between the Contractor and other organizations (e.g., the Government or the emergency response contractor) will be over the telephone. The Government shall direct safety and health correspondence to the SHM through the Contractor's Project Manager. The following emergency telephone numbers and information must appear in the APP/SSHP, at a minimum.

1.36.3.2 Name, address, and phone number of medical treatment facility and physician.

1.36.3.3 Ambulance service's telephone number.

1.36.3.4 Fire department's telephone number.

1.36.3.5 Police department's telephone number.

1.36.3.6 EPA Region 2's telephone number.

1.36.3.7 EPA and NJDEP spill control telephone numbers.

1.36.3.8 Government's telephone number.

1.36.3.9 Township telephone number.

1.36.3.10 National Response Center's telephone number.

1.36.4 Site Security

The Contractor is responsible for securing the Site.

1.37 PERSONAL HYGIENE AND DECONTAMINATION

Personnel entering the EZ or CRZ or otherwise exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids shall adhere to the following personal hygiene and decontamination provisions. Decontamination shall be performed in the CRZ prior to entering the SZ from the EZ. Chapter 10 of NIOSH Pub No. 85-115 shall be consulted when preparing decontamination procedures. A detailed discussion of personal hygiene and decontamination facilities and procedures to be followed by site workers shall be submitted as part of the APP/SSHP. Employees shall be trained in the procedures, and the procedures shall be enforced throughout site operations.

1.37.1 Decontamination Facilities

A personnel decontamination facility shall be provided within the CRZ. This facility shall be used by both Contractor and Government personnel.

1.37.2 Procedures

1.37.2.1 The APP/SSHP shall outline procedures to be used for decontamination of site personnel.

1.37.2.2 Personnel performing or supervising remedial work within the EZ or CRZ or those workers exposed (or subject to exposure) to the contaminants of concern, sediment, sludge, or water at the Site shall be instructed by the Contractor in the requirements of, and advised to observe and adhere to, the personal hygiene-related provisions of this paragraph. A detailed discussion of personnel decontamination and sanitation protocols to be followed by site workers shall be submitted as part of the APP/SSHP. Any personnel found to be disregarding the personal hygiene-related provisions of the APP/SSHP shall be barred from the Site.

1.37.2.3 The following facilities shall be made available to all onsite personnel:

1.37.2.3.1 Contained storage and legal disposal of used disposable outerwear.

1.37.2.3.2 Hand and face washing facilities.

1.37.2.3.3 A facility for changing into and out of and storing work clothing separate from street clothing.

1.37.2.3.4 A lunch and/or break room.

1.37.2.3.5 A smoking area.

1.37.2.3.6 Shower facilities.

1.37.2.4 The following procedures shall be followed by all onsite personnel:

1.37.2.4.1 Disposable outerwear shall not be reused, and, when removed, shall be placed inside disposal containers provided for that purpose located in the CRZ.

1.37.2.4.2 Smoking and chewing of tobacco or chewing gum shall be prohibited except in the designated smoking area, provided by the Contractor, in the SZ.

1.37.2.4.3 Eating and drinking shall be prohibited except in the designated lunch or break area, provided by the Contractor, in the SZ.

1.37.2.4.4 All outerwear shall be removed prior to entering the lunch area or smoking area, and prior to washing hands.

1.37.2.4.5 Contractor personnel shall be required to thoroughly cleanse their hands and other exposed areas before entering the smoking or lunch area.

1.37.2.5 The Contractor shall establish decontamination and sanitation procedures and areas appropriate for each level of PPE currently in use onsite. The procedures must include the stations and equipment necessary for personnel decontamination and sanitation. The following guidelines are minimum requirements for the Contractor's personnel decontamination procedures:

Level C Decontamination

Station 1:	Equipment Drop	Deposit equipment (tools, sampling devices and containers, monitoring instruments, radios, clipboard, etc.) on plastic drop cloths. During hot weather, set up a cool down station within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with either decon solution or detergent water as appropriate. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liners.
Station 4:	Canister or Mask Change	If worker leaves EZ to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5:	Boot and Outer Garment Removal	Remove and deposit in separate containers lined with plastic.
Station 6:	Facepiece Removal	Remove facepiece. Avoid touching face with fingers. Deposit facepiece on plastic sheets.

Station 7:	Gloves	Remove and deposit inner gloves in the container lined with plastic.
Station 8:	Field Wash	Thoroughly wash hands and face.

Modified Level D/Level D Decontamination

Station 1:	Equipment Drop	Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboard, etc.) on plastic drop cloths. During hot weather operations, cool down station may be set up within this area.
Station 2:	Boots and Gloves Wash and Rinse	Scrub outer boots and gloves with either decon solution or detergent water as appropriate. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Boot, Gloves, and Outer Garment Removal	Remove and deposit boots, chemical-resistant splash suit, and inner gloves in separate containers lined with plastic.
Station 5:	Field Wash	Thoroughly wash hands and face.

1.37.2.6 All personnel shall enter the decontamination facility from the EZ through the inner or contaminated side of the CRZ. All contaminated materials shall be left in the CRZ. Contaminated material shall remain in this area until it is removed for proper disposal. All wash water and decontamination solutions shall be collected in appropriate containers for disposal. Decontamination fluids shall be disposed of in accordance with applicable federal, state or local requirements.

1.37.2.7 All PPE worn onsite shall be decontaminated or properly stored or disposed of at the end of the work day. The Site Superintendent shall be responsible for ensuring all PPE is decontaminated before being reissued, and the SSHO shall verify that this task is performed.

1.37.2.8 Non-disposable PPE shall be washed with a low-sudsing detergent, rinsed with warm water, and then wiped dry with a disposable cloth. The Contractor shall evaluate the use of a qualified service to launder PPE. Decontaminated PPE shall be stored in a secure area of the SZ.

1.38 VEHICLE/EQUIPMENT DECONTAMINATION

Vehicles and equipment used in the EZ shall be decontaminated in the CRZ prior to leaving the Site. The procedures for decontamination of vehicles and equipment shall be addressed in the APP/SSHP.

A special “clean area” shall be established for performing equipment maintenance. This area shall be used when personnel are required by normal practices to expose themselves to contact with sediment, i.e., crawling under a vehicle to change engine oil. All equipment shall be decontaminated by washdown in the CRZ prior to maintenance work. Maintenance such as greasing heavy equipment will not necessitate

decontamination unless the job requires body contact with sediment.

Seats of equipment and vehicles used in the EZ shall not be cloth-covered. They shall be free from cracks or holes that would allow dust to enter seat padding or shall be covered with a temporary sheet vinyl covering.

1.38.1 Decontamination Facilities

A decontamination station shall be provided within the CRZ for decontaminating vehicles and equipment leaving the EZ. At a minimum, this facility shall include a high-pressure wash area for equipment and vehicles and a steam cleaning system for use after the mud and/or site material has been cleaned from the equipment. The pad shall be constructed to capture decontamination water, including over-spray, and shall allow for collection and removal of the decontamination water using sumps, dikes and ditches as required. Spray water from these washing procedures shall be handled as provided elsewhere in these specifications.

1.38.2 Procedures

Procedures for equipment decontamination shall be developed and utilized to prevent the spread of contamination into the SZ and offsite areas. These procedures shall address disposal of contaminated products and spent materials used on the Site, including containers, fluids, oils, etc. Any item taken into the EZ shall be assumed to be contaminated and shall be inspected and/or decontaminated before the item leaves the area. Vehicles, equipment, and materials shall be cleaned and decontaminated prior to leaving the Site. Construction material shall be handled in such a way as to minimize the potential for contaminants being spread and/or carried offsite. Prior to exiting the Site, vehicles and equipment shall be monitored to ensure the adequacy of decontamination. Personnel engaged in vehicle decontamination shall wear protective equipment including protective clothing and respiratory protection consistent with the requirements of this specification and the APP/SSHP.

1.39 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

The APP/SSHP shall describe the emergency and first aid equipment to be available onsite. The following items, at a minimum, shall be maintained onsite and available for immediate use:

1.39.1 Advanced First Aid, including AED, equipment and supplies.

1.39.2 Emergency eyewashes and showers which comply with ANSI Z358.1.

1.39.3 Fire extinguishers with a minimum rating of 2A:10-B:C shall be provided at site facilities and in all vehicles, and at any other site locations where flammable or combustible materials present a fire risk.

1.40 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

An Emergency Response Plan that meets the requirements of 29 CFR 1910, Section 120 (I) and 29 CFR 1926, Section 65 (I) shall be developed and implemented as a section of the APP/SSHP. This plan must present procedures the Contractor shall follow in the case of an injury or gross chemical exposure or in case the Contractor observes an emergency unrelated to the field work. In the event of any emergency

associated with remedial action, the Contractor shall, without delay, alert all onsite employees that there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Government; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Employees that are required to respond to hazardous emergency situations shall be trained in how to respond to such emergencies. The plan shall be rehearsed regularly as part of the overall training program for site operations. The plan shall be reviewed periodically and revised as necessary to reflect new or changing site conditions or information. Copies of the accepted APP/SSHP and any revisions shall be provided to the affected local emergency response agencies. The following elements, at a minimum, shall be addressed in the plan:

1.40.1 Pre-Emergency Planning

The local emergency response agencies shall be contacted and met with during the preparation of the Emergency Response Plan. Involvement of local fire, police, and rescue authorities is necessary to ensure better coordination and proper implementation of the plan. In all cases the site-specific Emergency Response Plan must be consistent with the community contingency plan regardless of whether local responders are used during remedial action. Coordination and scheduling of these activities is the Contractor's responsibility. The Contractor is required to conduct a site visit for the appropriate response agencies. This visit and kick-off meeting should provide the agencies with the following information:

- a. Site Layout
- b. Nature and Scope of Work
- c. Schedule for Construction Activities
- d. Hazard Potentials of Materials Associated with Site Activities
- e. Onsite Personnel Locations
- f. Location of Utility Lines
- g. Entrance and Egress Routes
- h. Emergency Communications
- i. Decontamination Procedures
- j. Response Times
- k. Evacuation Routes
- l. Site-Specific Safety and Health Plan
- m. Response Restraints
- n. Emergency Response Plan Components

The Contractor must notify, in writing, through the USACE Project Office, the local emergency responders and the EPA of any changes to the Emergency Response Plan. Responders' participation in the Contractor's emergency drills is encouraged. The form at the end of this section entitled "Agreement for Emergency Response Services" shall be used by the Contractor to develop an individual agreement between the Contractor, a local emergency responder, USACE, and EPA.

1.40.2 Personnel roles, lines of authority, and communications for emergencies and training.

1.40.3 Emergency recognition and prevention.

1.40.4 Site topography, layout, and prevailing weather conditions.

1.40.5 Criteria and procedures for site evacuation (emergency alerting procedures, employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control).

1.40.6 Specific procedures for decontamination and medical treatment of injured personnel.

1.40.7 Route maps to nearest pre-notified medical facility. Site support vehicles shall be equipped with maps. The Contractor shall visit the hospital designated in the SSHP to determine whether they can handle the types of injury that might occur at the Site. At the beginning of project operations, drivers of the support vehicles shall become familiar with the emergency route and the travel time required.

1.40.8 Emergency alerting and response procedures including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, federal, state, and local environmental agencies, as well as the SHM, the Site Superintendent, their alternates, and the Government).

1.40.9 Criteria for initiating community alert program, contacts, and responsibilities.

1.40.10 Procedures for reporting incidents to appropriate government agencies. In the event that an incident such as an explosion, fire, or a spill or release of toxic materials occurs during the course of the project, the appropriate government agencies shall be immediately notified. In addition, the Government shall be verbally notified immediately and receive a written notification within 24 hours. The report shall include the following items:

1.40.10.1 Name, organization, telephone number, and location of the Contractor.

1.40.10.2 Name and title of the person(s) reporting.

1.40.10.3 Date and time of the incident.

1.40.10.4 Location of the incident, i.e., site location, facility name.

1.40.10.5 Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident.

1.40.10.6 Cause of the incident, if known.

1.40.10.7 Casualties (fatalities, disabling injuries).

1.40.10.8 Details of any existing chemical hazard or contamination.

1.40.10.9 Estimated property damage, if applicable.

1.40.10.10 Nature of damage and effect on contract schedule.

1.40.10.11 Action taken to ensure safety and security.

1.40.10.12 Other damage or injuries sustained, public or private.

1.40.11 Procedures for critique of emergency response and follow-up.

1.40.12 Site security and control for incidents.

1.40.13 Procedures to monitor and respond to severe weather, flooding and blizzards.

1.40.14 Procedures for dealing with fires, explosives and spills.

1.40.15 Procedures for decontaminating emergency response vehicles and equipment.

1.40.16 In the event of an injury or illness among the site personnel, the certified first aid practitioner shall take control. The injured or ill person shall be transferred to the medical facility designated in the Contractor's APP/SSHP. Decontamination of personnel shall be accomplished prior to transfer if the time and situation permits and shall be conducted under the direction of the SSHO. If contaminated persons are sent to the medical facility, they shall be accompanied by the SSHO or Safety and Health Technician.

1.40.17 The Contractor shall immediately inform the Government and SHM of any accidents, injuries, illnesses, or environmental releases associated with this contract. Paragraph 1.38.10 lists the information that must be provided in the report. Contractors will arrange for their own emergency medical treatment. The Government has no responsibility to provide emergency medical treatment.

1.40.18 When an evacuation is necessary, all field team members shall go to the reassembly point for that study area. The Emergency Response Plan shall identify the reassembly points for Contractor personnel in the event of any evacuation.

1.40.19 Contingency planning procedures and Contractor personnel responsibilities for potential emergencies shall be identified in the APP/SSHP. Emphasis in the contingency planning section shall be placed on procedures. Contingency planning shall include situations that will involve mobilization of the surrounding community. A meeting with the local emergency preparedness agency shall be scheduled by the Contractor to discuss the contingency measures that will be followed in the event of a major emergency that may affect offsite areas. A representative of the USACE, the Government, the Contractor, the SHM, and the CIH will all be required to attend. It shall be the responsibility of the Contractor to prepare an agenda and chair this meeting. This agenda shall be sent to all participating parties prior to the scheduled meeting. At this meeting, the Contractor's suggested guidelines and requirements shall be presented for protecting local residents in the event of major fires and explosions and the offsite

migration of releases from the Site. Contingency procedures shall be confirmed by consensus of the attending parties. Elements of the discussion shall include:

1.40.19.1 Names, responsibilities, and authority of personnel assigned to implement emergency actions and the contingency plan

1.40.19.2 Site security in the event of an emergency

1.40.19.3 Recordkeeping and reporting requirements

1.40.19.4 Criteria for initiating the community contingency plan

1.40.19.5 Emergency response procedures contained in the SSHP

The conclusions reached during the meeting discussion shall be formally documented.

1.41 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGMENT

A copy of a Contractor-generated certificate of worker/visitor acknowledgment shall be completed and submitted for each visitor allowed to enter the CRZ or EZ, and for each employee, following the example certificate at the end of this section.

1.42 INSPECTIONS

The SSHO's daily inspection logs shall be attached to and submitted with the Daily Quality Control reports. Each entry shall include the following: date, work area checked, employees present in work area, PPE and work equipment being used in each area, special safety and health issues and notes, and signature of preparer.

Drill rigs and support vehicles shall be inspected and certified as safe by a competent person prior to arrival onsite and daily prior to operations.

1.43 SAFETY AND HEALTH PHASE-OUT REPORT

A Safety and Health Phase-Out Report shall be submitted in conjunction with the project closeout report and will be received prior to final acceptance of the work. The following information shall be included, at a minimum:

1.43.1 Summary of the overall safety and health performance (accidents or incidents including near misses, unusual events, lessons learned, etc.).

1.43.2 Final decontamination documentation including procedures and techniques used to decontaminate equipment, vehicles, and onsite facilities.

1.43.3 Signatures of the SHM and SSHO.

1.43.4 Copies of hazardous waste manifest forms indicating that hazardous wastes were properly disposed of.

1.43.5 Final physical/medical certifications.

1.43.6 Daily Safety Inspection Reports.

1.43.7 Weekly Safety Reports.

1.43.8 Training Logs.

1.43.9 Accident Reports.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

EXAMPLE CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGMENT

PROJECT NAME:
CONTRACT NO.:
PROJECT ADDRESS:
CONTRACTOR'S NAME:
EMPLOYEE'S NAME:

The contract for the above project requires the following: that you be provided with and complete formal and site-specific training; that you be supplied with proper personal protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE.

Name:

Date:

FORMAL TRAINING: I have completed the following formal training courses that meet the OSHA requirements:

Date Completed

40 hour:

8 hour supervisory:

8 hour refresher:

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training.

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy.

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months that was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform

work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

___ were no limitations to performing the required work tasks.

___ were identified physical limitations to performing the required work tasks.

Date medical exam completed:

Employee's Signature:

Date:

Printed Name:

Social Security Number:

Contractor's Site Safety and Health Officer Signature:

Date:

Printed Name:

Social Security Number:

TASK HAZARD AND CONTROL REQUIREMENTS CHECKLIST

Task: _____

Initial Anticipated Hazard: _____

Initial PPE: _____

Initial Controls: _____

Initial Exposure Monitoring: _____

HAZWOPER Medical Surveillance Required	yes	no
--	-----	----

HAZWOPER Training Required	yes	no
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FIELD SAFETY CHECKLIST

Work Location: _____

1. Reviewed work plans with project engineer: _____
(initial/date)
2. Requested maps of aboveground and underground utilities: _____
(initial/date)
3. Reviewed utility maps: _____
(initial/date)

(water supply, firewater, sewer, process sewer, electric, gas, telephone, other underground utilities)

4. Met with utilities representative to review utility locations and asked each representative the following questions: _____
(initial/date)
 - a. Any underground utilities at work site location?
 - b. Any ongoing construction that would affect field activities?
 - c. Any chemical releases associated with utilities?
 - d. Any other hazards associated with utilities?
 - e. Any special requirements?

Names of utilities and their representatives:

Utility Company

Representative

FIELD SAFETY CHECKLIST (CONT'D)

5. Determine if any permits are required: _____
(initial/date)
Type(s): _____
6. Obtain necessary permits: _____
(yes or no)
Permit expiration date(s): _____
7. Requested MSDS for any known or expected onsite chemical:

(initial/date)
8. Client's established protocol, if any: _____

9. Obtained final approval for commencement of work: _____

Comments:

EXCAVATION SAFETY SIGNOFF SHEET
(TO BE COMPLETED BEFORE SUBSURFACE WORK COMMENCES)

Excavation locations at the Roebing Steel OU5 Superfund Site have been evaluated for clearance of underground utilities (i.e., electrical, sewers, firewater, and other piping) as well as 10 feet clearance from overhead powerlines. Additionally, clearance has been received from client, property owner, and other affected parties.

In addition, the Contractor's Site Safety Supervisor and the drilling foreman have familiarized themselves with the Site's safety and special considerations:

Printed Name	Signature
Project Engineer _____	_____
Drilling Contractor _____	_____
City Engineer _____	_____
Gas & Water _____	_____
Electric _____	_____
Telephone _____	_____
TV Cable _____	_____

Note: Excavation will commence after all affected parties have signed off.

UTILITY CLEARANCE FOR FIELD ACTIVITIES

Action: All utilities for the Site are to be cleared by the appropriate parties prior to initiating any intrusive activity.

Utilities: Power lines and electrical duct banks, telephone lines, light circuits, data lines, cable television lines, fiber optic lines, fire water pipes, potable water pipes, industrial water supply pipes, sewers, drainage pipes, storage tank piping and ventilation pipes, steam pipes, natural gas pipelines, vaults, sump pits, etc.

Where: Every location where intrusive work is scheduled.

Who: Any person having responsibility for the intrusive work or who participates in the intrusive work, and the property owner and utility representatives.

When: Before work in the target area begins.

How: “ONE CALL” agencies, property owner information, tools, eyes, and common sense. Make records based on a “MEET” or a “LOCATE”.

Why: The minimum effort needed to protect life and property; there is no excuse not to.

Contacts: New Jersey “One Call” System - 1-800-272-1000.

Applications:

- Gas Stations
- Refineries
- Power Plants
- Factories
- Wall and Ceiling Installation
- Abandoned Warehouses
- Vacant City Block

Attachment to Emergency Response Plan

AGREEMENT FOR EMERGENCY RESPONSE SERVICES

This agreement certifies:

That the (local HAZMAT team, fire fighting, police, emergency medical responder, health care providers, etc., organization responding at the Site) department received and reviewed the Emergency Response Plan for the Roebling Steel OU5 Superfund Site (Site), located in Florence Township, New Jersey.

That on [date], the representative from the [Department] participated in an onsite visit (or conducted a meeting, depending on the organization). During the visit, [Prime Contractor] explained the details of the Site's Emergency Response Plan, including but not limited to: roads and evacuation routes, properties of hazardous materials handled at the Site, locations where site personnel would normally be working [add any other special provision], and expectations for emergency response support.

The [Prime Contractor] will notify in writing the [Department and EPA] (through the USACE Project Office) of any amendment or significant change to the Emergency Response Plan.

If applicable:

That the U.S. Environmental Protection Agency (EPA) Region 2 provided (or will provide) the following:

- Description of any site-specific training.
- Description of equipment and serial numbers, with their specific location. This equipment will be fully available to the [Department] for training and familiarization, but will remain EPA's property in accordance with SARA Title I Section 123 (b)(2).
- Location of information repository.
- Reference material to be kept onsite.)

That through the aforementioned provisions the [Department] agrees to provide [service] in the event of an emergency or threat of an emergency at the Site. This agreement will remain in effect for the duration of [Prime Contractor] contract or until 90 days after written notice is given by either party justifying cancellation.

Department

Prime Contractor

EPA (concurrence)

USACE (concurrence)

END OF SECTION

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

This section covers the requirements for protection of the human and natural environment during site preparation, grading, cover installation, and site restoration. This includes furnishing all labor, materials, equipment, and incidentals required to provide environmental pollution and damage control.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

33 CFR 328	Definition of Waters of the United States
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions
49 CFR 171 - 178	Hazardous Materials Regulations

ENGINEERING MANUALS (EM)

EM 385-1-1	U.S. Army Corps of Engineers Safety and Health Requirements Manual
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1.3 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.3.1 Environmental Protection Plan; SD-01 Pre-Construction Submittals; GA

An Environmental Protection Plan shall be submitted for review and approval within 14 calendar days prior to the Pre-Work Conference. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the revisions to the plan including any reporting requirements and methods for administration of the Contractor's Environmental Protection Plan. The Environmental Protection Plan shall be current and maintained on site by the Contractor.

1.3.1.1 Compliance

No requirement in this section will relieve the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During construction, the Contractor will be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.3.1.2 Contents

1.3.1.2.1 Name of person within the Contractor's organization who will be responsible for ensuring adherence to the Environmental Protection Plan.

1.3.1.2.2 Name and qualifications of person responsible for manifesting any hazardous waste to be removed from the Site.

1.3.1.2.3 Name and qualifications of person responsible for training the Contractor's environmental protection personnel.

1.3.1.2.4 Description of the Contractor's environmental protection personnel training program.

1.3.1.2.5 A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not commercial operating facilities. Evidence of each the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction.

1.3.1.2.6 A contaminant prevention plan that identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Safety Data Sheets (SDS) and the maximum quantity of each hazardous material to be on site at any given time shall

be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the Site, the plan shall be updated.

1.3.1.2.7 A waste water management plan that identifies the methods and procedures for management of waste waters which are directly derived from construction activities, such as decontamination water and stormwater that comes into contact with contaminated soil. If disposal is to a sanitary sewer, the plan must include documentation that the Waste Water Treatment Plant Operator has approved the volume and type of discharge.

1.3.1.2.8 A spill prevention and response plan that identifies methods and procedures for preventing spills and procedures for addressing spills that occur at the Site.

1.3.1.2.9 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.3.2 Protection Features Survey Report; SD-03 Product Data; GA

The Contractor shall complete the joint condition survey of the Site features to be protected in accordance with Paragraph 1.7, and submit to the Contracting Officer for approval.

1.4 DEFINITIONS

1.4.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; adversely affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.4.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.4.3 Contractor-Generated Hazardous Waste

Contractor-generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste as defined in 40 CFR 261. These waste streams would typically consist of material brought on site by the Contractor to execute work, but not fully consumed during the course of construction. Examples include, but are not limited to, excess solvents, waste solvents, and excess pesticides, excess herbicide, and pesticide-contaminated equipment rinse water.

1.4.4 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.5 GENERAL REQUIREMENTS

1.5.1 The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract.

1.5.2 The Environmental Protection Plan shall not be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations. During construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.6 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.7 PROTECTION FEATURES

This paragraph supplements the Contract Clause “Protection of Existing Monitoring wells, Vegetation, Structures, Equipment, Utilities, and Improvements”. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, but not specifically identified on the Contract Drawings as such, along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor’s assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the Contract Drawings, regardless of interference which their preservation may cause to the Contractor’s work under the contract.

1.8 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the Contract Documents which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that they will have an adverse environmental impact.

1.9 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection Plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract or in accordance with the Federal Acquisition Regulation or other Federal law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, regional, and local environmental laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the Contract Documents and permits. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the Contract Drawings or specified to be cleared, the Contractor shall not remove, cut, deface, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction commences.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the Contract Drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Control

Providing erosion and sediment control measures in accordance with Federal, State, regional, and local laws and regulations is the Contractor's responsibility. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) in accordance with Contractor's approved Control of Erosion and Sedimentation Plan developed in accordance with SECTION 02370 – EROSION AND SEDIEMENT CONTROL. BMPs may include, but are not limited to, vegetation cover, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, and diversion channels and piping. The Contractor shall remove any temporary measures after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary trailers shall be placed in areas designated on the Contract Drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for disturbed earthen areas to prevent sediment moving off site.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and groundwater. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. The Contractor shall not affect any existing surface water features.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 AIR MONITORING

For the protection of public health, monitor and control contaminant emissions to the air from remedial action area sources to minimize short-term risks that might be posed to the community during implementation of the remedial alternative in accordance with SECTION 01351 – SAFETY, HEALTH and EMERGENCY RESPONSE FOR CONTAMINATED SITES and SECTION 01362 – PERIMETER AIR MONITORING.

3.4.2 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environmental damage by noise and interference with residences adjacent to the Site. The Contractor shall comply with all Federal, State, and local ordinances for noise. Noise levels shall not exceed 50 decibels (db) during nighttime (8:00 p.m.- 7:00 a.m.) and 65 db during daytime (7:00 a.m. – 8:00 p.m.),

measured at the fence line of the nearest inhabited residence to the noise source. Equipment may be fitted with sound enclosures if necessary.

3.4.3 Particulates

Dust particles, aerosols, and gaseous by-products from construction activities must be controlled at all times, including weekends, holidays and hours when work is not in progress. Maintain temporary access roads and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, or local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Mulching, water sprinkling, temporary enclosures and other appropriate methods will be permitted to control particulates in the work area, if necessary. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. Provide sufficient, competent equipment to accomplish these tasks. Properly maintain equipment to reduce gaseous pollutant emission.

3.4.4 Hydrocarbons and Carbon Monoxide

Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal, State, and local allowable limits at all times.

3.4.5 Odors

Odors from construction activities must be controlled at all times. The odors must be in compliance with State regulations and/or local ordinances and may not constitute a health hazard.

3.5 WASTE HANDLING, STORAGE AND DISPOSAL

3.5.1 Solid Wastes

Handling, storage, and disposal of solid waste shall be performed in accordance with SECTION 02120 – OFF-SITE TRANSPORTATION AND DISPOSAL.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion-resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations. Chemical accident prevention provisions shall be made in accordance with 40 CFR 68.

3.5.3 Contractor-Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, the Contractor shall manage and store hazardous waste in compliance with 40 CFR 262. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and

wastes, protect it from the weather by placing it in a safe covered location, and take precautionary measures against accidental spillage. Storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178 and State and local laws and regulations are the Contractor's responsibility. Transport and dispose of hazardous waste in accordance with SECTION 02120 – OFF-SITE TRANSPORTATION AND DISPOSAL. Spills of hazardous or toxic materials must be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills are the Contractor's responsibility. The disposal of Contractor-generated hazardous waste and excess hazardous materials is the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spillage and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, regional and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed of in accordance with 40 CFR 279, and State and local laws and regulations.

3.5.5 Wastewater

The Contractor shall dispose of construction-related wastewater, such as water from equipment decontamination that comes into contact with contaminated soil, in accordance with all Federal, State and local laws and regulations.

3.6 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If, during excavation or other construction activities, any previously unidentified or unanticipated historical, archaeological, and/or cultural resources are discovered, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, paving, walls, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery, the Contractor shall immediately notify the EPA's Representative so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special removal of the finds should be made. The Contractor shall cease all activities that may result in impact to or destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously-used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds.

3.8 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain temporary pollution control facilities and devices for the duration of the contract or for the length of time construction activities create pollutants.

3.9 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: method of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes and other regulated contaminants.

END OF SECTION

SECTION 01362

PERIMETER AIR MONITORING

PART 1 GENERAL

1.1 SCOPE OF WORK

This section describes the responsibilities of the Contractor for monitoring potentially contaminated particulates at the site perimeter fence line. This section is to be used in the preparation of Perimeter Air Monitoring Plan (PAMP). Work performed under these specifications will be actively managed so that airborne dust and contaminants generated by site activities are maintained below the applicable allowable levels established for general public exposure by the United States Environmental Protection Agency (EPA).

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of these standards, the revision in effect at the time of contract award shall apply.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA/625/R-96/010a	Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air
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NAAQS	National Ambient Air Quality Standards (NAAQS)
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Matters of interpretation of these standards associated with perimeter air monitoring shall be identified and submitted to the USACE's Representative. All matters of interpretation shall be resolved before starting work. Where the requirements of this Specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.3 SUBMITTALS

Approval from the USACE's Representative is required for submittals with an "GA" designation; submittals with an "FIO" designation are for information only. The Contractor shall submit the following to the USACE's Representative in accordance with SECTION 01330 – SUBMITTAL PROCEDURES. The Contractor shall maintain a copy of all documents described in this section on site at all times during construction.

1.3.1 Perimeter Air Monitoring Plan (PAMP); SD-01 Pre-Construction Submittal; GA

The Contractor shall submit the PAMP to the USACE's Representative for approval in accordance with Paragraph 1.5 of this Section.

1.3.2 Progress Reports; SD-06 Test Report, FIO

The Contractor shall submit the following documents to the USACE's Representative on a weekly basis during the course of the project site work:

1.3.2.1 Air Monitoring Log in accordance with Paragraph 1.9.5.1 of this Section, including (but not limited to):

1.3.2.1.1 Dates and times.

1.3.2.1.2 Equipment and media.

1.3.2.1.3 Results of direct-reading instruments.

1.3.2.1.4 Summary printouts for instrumentation using automatic data logging.

1.3.2.1.5 Documentation of action level exceedances and corrective actions.

1.3.2.2 Daily Perimeter Air Monitoring Summary Reports in accordance with Paragraph 1.9.4.2 of this Section.

1.4 REGULATORY REQUIREMENTS

Work performed under this contract shall comply with all applicable Federal and local safety and occupational health laws and regulations.

1.5 PERIMETER AIR MONITORING PLAN

The Contractor shall develop, submit for review and implement after acceptance a written PAMP for Remedial Action operations.

1.5.1 Contents

A PAMP shall be prepared covering remediation activities to be performed by the Contractor and all subcontractors. The PAMP shall establish, in detail, the protocols necessary for the anticipation, recognition, evaluation, and control of emissions associated with each task performed based upon site-specific conditions.

The PAMP shall be a stand-alone plan and shall include, but not be limited to, the following:

- 1.5.1.1 Protocols for control of airborne contaminant emissions.
- 1.5.1.2 Air quality monitoring procedures.
- 1.5.1.3 Protocols for collection of meteorological data.
- 1.5.1.4 Detailed descriptions of equipment, O&M procedures, and calibration schedules.
- 1.5.1.5 Organizational structure indicating personnel responsibilities.
- 1.5.1.6 The qualifications of the Air Quality Monitoring Specialist.
- 1.5.1.7 Plans for response if the action levels are exceeded.
- 1.5.2 Acceptance and Modification

The PAMP shall be submitted to the USACE's Representative at least 14 calendar days prior to the Pre-Work Conference for review and approval. Any deficiencies in the PAMP will be discussed at the pre-construction safety conference, and the PAMP shall be revised to correct the deficiencies and resubmitted for acceptance. On-site waste segregation work shall not begin until the plan has been accepted by the USACE's Representative.

The Contractor shall keep a copy of the written PAMP on-site for review by the USACE's Representative. As work proceeds, the PAMP shall be adapted to new situations and new conditions. Changes and modifications to the accepted PAMP shall be made with the knowledge and concurrence of the Air Quality Specialist (AQS), the Site Superintendent, and the USACE's Representative. The requested modification shall not be implemented until authorized in writing by the USACE's Representative. Should the USACE's Representative require a modification of any portion or provision of the PAMP, the USACE's Representative will notify the Contractor in writing of such modifications.

The USACE's Representative may stop all site work at any point if the Contractor shows any disregard for the provisions of this specification or the accepted PAMP.

1.6 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

Project site conditions are detailed in SECTION 01010 – SUMMARY OF WORK.

1.7 AIR QUALITY PROTECTION PRINCIPLES

The Contractor shall provide all equipment, materials, and personnel necessary to monitor and quantify dust concentrations at the site perimeter. The PAMP shall describe procedures, equipment, and training needed to monitor and quantify the amount of airborne particulate generated by site work activities

during waste segregation, handling of contaminated soil stockpile, and grading of industrial area. The Contractor shall operate a program of equipment maintenance in accordance with the manufacturer's specifications. The USACE's Representative may reject the use of equipment if, in its opinion, it provides less protection than that specified in the PAMP.

1.7.1 Action Levels

The Contractor shall perform remediation in a manner such that ambient air quality objectives at the site perimeter are achieved in accordance with the action levels presented in Table 01362-1. The action levels and required actions shall be presented in the PAMP in both text and tabular form in accordance with Table 01362-1.

1.8 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

The Contractor's project team shall include:

1.8.1 Air Quality Specialist

The services of an AQS, who is experienced in air monitoring and sampling, shall be utilized. The Safety and Health Manager (SHM) can also serve as the AQS if he/she meets the qualification requirements of an AQS listed herein. This specialist shall be familiar with the Site's hazards and the scope of this project. The Contractor shall document the specialist's name and qualifications in the PAMP.

1.8.1.1 Qualifications

The Contractor shall demonstrate to the USACE's Representative that this AQS has the following credentials:

1.8.1.1.1 At least three years of experience in air monitoring or sampling, including the following:

1.8.1.1.1.1 Serving in responsible professional charge on at least one project in which the impacts of site work on community air was measured.

1.8.1.1.1.2 At least 100 hours of hands-on experience (each) in taking ambient air measurements and samples by EPA methods.

TABLE 01362-1 – Perimeter Air Monitoring Requirements

Analyte	Action Level ^{1, 2}	Frequency per location	Method	Action Required
Real Time Respirable Dust (PM10)	150 µg/m ³ (15 minute) 100 µg/m ³ (60 minutes)	Continuously during the work day, and for 1 hour before and after. Log 15-minute averages.	Direct-reading dust meter with data logger, e.g. MIE-DR-4	15 minutes: Evaluate engineering controls, implement dust control. 60 minutes: Stop dust-generating activities and notify the USACE's Representative. Increase dust control measures.

1. Total and compound-specific action levels are evaluated using data corrected for background values.
2. Downwind concentrations at fence line, over background.

1.8.1.1.2 A scientific or engineering college degree that included the study of air quality issues. The USACE's Representative may accept equivalent training at its sole discretion.

1.8.1.1.3 Appropriate credentials for working on the Site under the SSHP.

1.8.1.1.4 Professional certification appropriate to this effort. Although the USACE's Representative may accept other credentials, the Certified Industrial Hygienist credential offered by the American Board of Industrial Hygiene and the Qualified Environmental Professional credential offered by the Institute for Professional Environmental Practice are both deemed appropriate.

1.8.1.2 Responsibilities

The AQS shall be responsible for:

1.8.1.2.1 Preparing the air monitoring protocols for the site work.

1.8.1.2.2 Selecting the equipment to be used for air monitoring.

1.8.1.2.3 Determining the times, durations, and locations of air measurements.

1.8.1.2.4 Developing protocols to determine upwind location and to adjust monitoring results for ambient background.

1.8.1.2.5 Approving the qualifications of any technicians that will collect air measurements.

1.8.1.2.6 Interpreting the results of the air monitoring effort.

1.8.1.2.7 Approving and signing reports of air quality that the Contractor provides to the USACE's Representative.

1.8.1.2.8 Periodically evaluating if the selected equipment and protocols are adequately representing perimeter conditions.

1.8.1.2.9 Periodically auditing the implementation of the PAMP, and taking corrective action when necessary.

1.8.2 Air Monitoring and Sampling Technician (AM&ST)

During intrusive activities by the Contractor, an AM&ST shall perform the air monitoring activities as specified in the PAMP. The Site Safety and Health Officer (SSHO) can also serve as the AM&ST, if the AQS approves. The AM&ST shall have appropriate training approved by the AQS.

1.9 AIR QUALITY MONITORING

1.9.1 General

1.9.1.1 The monitoring specified in the PAMP shall detect and quantify airborne dust.

1.9.1.1.1 The Contractor shall collect, at minimum, the number of air quality measurements as shown in Table 01362-1. The Contractor shall use monitoring methods that accurately measure at detection limits that are consistent with the action levels listed in Table 01362-1. Air monitoring methods and equipment locations shall be proposed by the Contractor in the PAMP. The Contractor shall ensure that the air monitoring equipment proposed are consistent with monitoring objectives and associated action levels presented in Table 01362-1.

1.9.1.2 The continuous air monitoring equipment shall be capable of providing the following:

1.9.1.2.1 Downloadable data capable of providing continuous graph of readings.

1.9.1.2.2 Auto-Dialer, emergency lights or other alerting systems to promptly and effectively notify the Contractor that action levels have been exceeded.

1.9.1.3 The AQS shall certify that the air monitoring equipment proposed is consistent with Perimeter Air Monitoring objectives and associated action levels presented in Tables 01362-1. Air monitoring methods and equipment locations shall be proposed by the Contractor in the PAMP.

1.9.1.4 Equipment utilized for air monitoring in accordance with this section shall be calibrated before and after each use, as required, and maintained as per specified methods, manufacturer's recommendations, and good industrial hygiene practices. Test instruments used in the calibration of air monitoring equipment shall be calibrated and traceable to National Institute of Standards and Technology standards.

1.9.1.5 The Contractor shall document, in the site log or site files, the regular calibration of each instrument used. Only individuals trained to operate this equipment shall do so.

1.9.2 Meteorological Monitoring

1.9.2.1 The Contractor shall furnish, install, and maintain a portable meteorological station in accordance with SECTION 01351 – SAFETY, HEALTH AND EMERGENCY RESPONSE FOR CONTAMINATED SITES. Meteorological data shall be recorded and utilized in accordance with the same.

1.9.3 Real-time Air Monitoring

The Contractor shall collect each air measurement over a duration that the AQS determines will yield an accurate representation of the air quality at that time and location. The Contractor may collect measurements more frequently than required herein or utilize other appropriate monitoring techniques

with approval of the USACE's Representative.

1.9.4 Perimeter Air Monitoring Results Reporting

1.9.4.1 Air Monitoring Log

The Contractor shall maintain an up-to-date log for all monitoring activities. A copy of the log shall be submitted to the USACE's Representative weekly during the course of the project site work. The log shall contain sufficient information to verify that proper procedures were followed, and confirm the accuracy of results.

1.9.4.2 Daily Perimeter Air Monitoring Summary Report

The Daily Perimeter Air Monitoring Summary Report shall discuss calibration, calibration check, general observations, weather conditions, and discussion of all required corrective action. In addition, the report shall contain additional information where real-time monitoring is utilized.

1.9.4.2.1 A summary of real-time monitoring results shall be presented in tabular form. The table shall include results from all monitoring locations including background and at the minimum contain the following:

1.9.4.2.1.1 For dust, peak 15-minute average and daily time-weighted average with all results exceeding action levels clearly delineated and associated corrective action described.

1.9.4.2.1.2 Comparison of results corrected for background to peak 15-minute average, and time-weighted average action levels.

1.9.4.2.1.3 Summary of meteorological conditions during the monitoring period.

1.9.4.3 Within 5 working days of month's end, the Contractor shall compile and submit copies of each Daily Perimeter Air Monitoring Summary Report for which results were received from the previous calendar month.

1.10 RESPONSE TO AIR EMISSIONS

The Contractor shall compare the highest of direct reading measurements for airborne dust downwind of the Site (minus the value upwind) to the action levels in Table 01362-1. If the wind is blowing from a direction for which there is no monitor, the upwind value shall be assumed to be the lowest of the values collected by any of the monitors.

When the ambient air monitoring system reveals that an action level has been exceeded for 15 or more minutes, the Contractor shall evaluate its engineering controls, and implement emission controls. If its process modifications succeed, contractor shall report the exceedance in its Daily Perimeter Air Monitoring Summary Report.

When the air monitoring system reveals that the action level has been exceeded for an hour or more, the Contractor shall temporarily suspend intrusive activities, notify the USACE's Representative, and implement corrective action to reduce site-related emissions to below required action levels. The adequacy of these controls is subject to acceptance by the USACE's Representative prior to restarting intrusive activities. The Contractor shall report the exceedance in its Daily Perimeter Air Monitoring Summary Report.

Site emissions control measures that may be needed to reduce the emissions to below action levels may include, but are not limited to:

- Adding moisture to the soil
- Using a misting system
- Reducing the speed of equipment that disturbs the soil
- Installing barriers to reduce wind speed
- Limiting the rate of excavation

When the ambient air monitoring system reveals that action level has been exceeded, the AQS shall use that information to modify the action levels to which the direct-reading measurements are compared so that they will protect the community.

1.11 INSPECTIONS

The Contractor shall perform daily inspections of the job site and the surrounding work in progress in accordance with SECTION 01351 – SAFETY, HEALTH, AND EMERGENCY RESPONSE FOR CONTAMINATED SITES to ensure compliance with PAMP. The USACE's Representative may stop all site work at any point if the Contractor shows any disregard for the provisions of this specification or the accepted PAMP.

1.12 DUST AND EMISSION CONTROL

Dust control shall be used throughout the work at the Site and off-site in accordance with the Contractor's approved Dust Control Plan, as specified in SECTION 01351 – SAFETY, HEALTH, AND EMERGENCY RESPONSE FOR CONTAMINATED SITES.

PART 2 PRODUCTS

The Contractor shall provide all necessary monitoring devices, and support equipment to perform the monitoring per the approved Perimeter Air Monitoring Plan.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01380

PROJECT PHOTOGRAPHS

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish all labor, equipment, materials, and incidentals required to provide photographic documentation of construction activities.

1.2 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 – SUBMITTAL PROCEDURES:

1.2.1 Pre- and Post-Construction Photographs; SD-11 Closeout Submittals; FIO

The Contractor shall submit pre- and post-construction project photographs as specified in Paragraph 3.1 herein.

1.2.2 Progress Photographs; SD-11 Closeout Submittals; FIO

The Contractor shall submit construction progress photographs as specified in Paragraph 3.1 herein.

PART 2 PRODUCTS

2.1 PHOTOGRAPHIC LOGBOOK

The Contractor shall keep all written documentation concerning project photographs in a photographic logbook. The logbook shall be constructed of water-resistant paper and bound along the left edge.

PART 3 EXECUTION

3.1 PROJECT PHOTOGRAPHS

3.1.1 The Contractor shall furnish digital photographs in an electronic file format approved by the Contracting Officer, taken with a digital camera by an experienced photographer using suitable equipment, to record the important features of the Site prior to the commencement of work, during construction, and after the work has been completed.

3.1.2 Pre-Construction Photographs: Before work begins, the Contractor shall take digital photographs depicting existing site conditions. Coverage shall include, but not be limited to, , property boundary lines, all existing roadways and access roads, aboveground utilities, landscaping, trees, signage and other physical features located within the zone of influence of the construction. The coverage may be expanded if directed by the Contracting Officer.

3.1.3 Progress Photographs: After construction operations have been started at the Site, the Contractor shall photographically record the project. Each progress photograph shall be a separate electronic file. Progress photographs shall include coverage of:

- Site Preparation Activities
- Clearing and Grubbing
- Soil Erosion and Sediment Control Measures
- Grading and Cover Installation
- Installation of Access Road to Slag Area
- Fence Relocation, Installation, and Expansion
- Protection of Selected Trees within Revetment
- Site Restoration
- Demobilization
- Decontamination of Personnel, Tools, and Equipment
- Unanticipated Events or Accidents

3.1.4 Post-Construction Photographs: After completion of work, the Contractor shall take digital photographs of the Site. The Contracting Officer shall designate the locations.

3.1.5 The actual number and location of views to be taken for the entire project will be as directed by the Contracting Officer.

3.2 ELECTRONIC FILES FOR DIGITAL PHOTOGRAPHS

3.2.1 At a minimum, the Contractor shall download digital photographs from the digital camera to a personal computer daily during photographic sessions for transfer to an electronic file format. The electronic file shall be in JPEG format, with minimum compression applied.

3.2.2 The Contractor shall rename each downloaded electronic file at the time of download with a distinct filename that corresponds to the photographic logbook specified in Paragraph 3.3 – LOGBOOK DOCUMENTATION OF DIGITAL PHOTOGRAPHS. The filename shall have the following format as defined below:

yyyy-mm-dd_hhnn_xxx

- “yyyy” is the year the photograph was taken
- “mm” is the month the photograph was taken
- “dd” is the day the photograph was taken
- “hh” is the hour the photograph was taken using military time
- “nn” is the minute the photograph was taken using military time
- “xxx” is a three-digit sequential number, starting with 001, for each photograph taken during a given time period

3.2.2.1 An example of the above filename format is 2017-07-15_1845_002. This example

photograph filename would have been applied to the second photo taken at 6:45 p.m. on July 15, 2017.

3.2.3 The Contractor shall copy the electronic files to a compact disc (CD) or universal serial bus (USB) after renaming each file as described in Paragraph 3.2.2. The compact disc shall be “CD-R” format.

3.2.3.1 The Contractor shall submit two sets of digital photographs, each on a separate “CD-R” format compact disc.

3.2.3.2 The copy process shall be completed the same day the photographs are downloaded, except as approved by the Contracting Officer.

3.2.3.3 If the Contracting Officer allows the copy process to be delayed, the Contractor shall backup the electronic files on at least one storage device other than the hard drive of the personal computer storing the electronic files until the copy process is completed.

3.2.4 The Contractor shall submit compact discs containing electronic files of digital photographs a minimum of once weekly during photographic sessions.

3.2.5 All digital photographs and related electronic files are U. S. Government property and shall not be released by the Contractor to the public or news media.

3.3 LOGBOOK DOCUMENTATION OF DIGITAL PHOTOGRAPHS

3.3.1 The Contractor shall record pertinent information concerning digital photographs in a photographic logbook as specified in Paragraph 2.2 herein. Writing shall be done using waterproof ink.

3.3.2 The following information shall be recorded on the front cover of the logbook:

- a) Project name
- b) Contract number
- c) Contractor name

3.3.3 The following information shall be included for each photographic entry, at a minimum:

- a) Date
- b) Time
- c) Photograph filename
- d) Location
- e) Direction
- f) Description

3.4 VIEWS REQUIRED

3.4.1 Photographs shall illustrate condition and location of work and the state of progress.

3.4.2 During successive periods of photography, the Contractor shall take at least one

photograph from the same reference point as previously required.

3.4.3 The Contractor shall consult with the Contracting Officer during each period of photography for recommendations concerning views required.

END OF SECTION

SECTION 01381

VIDEOTAPING

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 This specification defines the requirements for video recording of the site premises. The Contractor shall furnish all labor, materials and equipment required to provide color, high-quality video/audio of the project site recording the site features prior to the commencement of work and after the work has been completed, and any important site features during construction. Under no circumstances shall construction begin until the Contracting Officer has received and accepted the pre-construction video recording. This recording will be used for reference during restoration, and as a record of pre-existing conditions should disputes or litigation arise.

1.1.2 The Contracting Officer reserves the right to reject the recording because of poor quality, unintelligible audio or uncontrolled pan or zoom. Any recording rejected by the Contracting Officer shall be re-recorded at no cost to the Government.

1.2 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 – SUBMITTAL PROCEDURES:

1.2.1 Pre-Construction, Progress, and Post-Construction Video; SD-11 Closeout Submittals; FIO

The Contractor shall furnish to the Contracting Officer two copies of each recording. Each recording shall be continuous, in color and recorded in a digital format stored on Digital Video Disc (DVD) or Universal Serial Bus (USB) media. The disks or USBs shall be written in accordance with the ISO-9660 Level 2 specification. Each disk or USB shall be labeled with the appropriate identification of its content.

1.3 VIDEO QUALITY

1.3.1 At a minimum, the video recording camera should be able to produce a resolution of 640 (pixel) x 480 (pixel) with a frame rate of 30 frames per second. Video files shall be stored in an industry standard Moving Pictures Expert Group (MPEG) format transferable to a DVD, USB, or to an external computer capable of playing MPEG files.

1.3.2 Video recording shall be performed by a qualified, established video recording firm knowledgeable in construction practices and experienced in the implementation of established inspection procedures.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 VIDEO SURVEY

3.1.1 The Contractor shall furnish a continuous, color videotape recording along the construction limits.

3.1.2 Coverage shall include, but not be limited to, all existing roadways, structures, aboveground utilities, landscaping, trees, signage, fencing, and other physical features located within the construction limits and any other adjacent properties. The coverage may be expanded if directed by the Contracting Officer.

3.1.3 A representative of the Contractor shall accompany the videographer during recording sessions to indicate the adjacent areas of potential construction activity and identify items and conditions which are to be recorded.

3.1.4 All recording shall be done during daylight hours. No recording shall be performed if weather is not acceptable to the Contracting Officer.

3.1.5 To produce the proper detail and perspective, artificial lighting shall be required where it is necessary to illuminate the shaded area caused by trees, utility poles, road signs, and other such objects.

3.2 AUDIO AND VIDEO

3.2.1 Audio/video media shall be professional-grade DVD or USB in National Television Standards Committee (NTSC) format.

3.2.2 Each DVD or USB shall be labeled with the contract name and number, Contractor's name, date, and location information such as street name, direction of travel, viewing side, etc.

3.2.3 Information appearing on the DVD or USB must be continuous and no editing or overlaying of information at a later date will be acceptable.

3.2.4 The following information shall appear on each video recording:

3.2.4.1 Upper left portion:

- a. Name of Contractor
- b. Day, date, and time
- c. Name of project

3.2.4.2 Lower left portion:

- a. Route of travel
- b. Viewing side
- c. Direction of travel

3.2.5 Time must be accurate to within 1/10 of a second and continuously generated.

3.2.6 Written documentation must coincide with the information on each DVD or USB to facilitate easy retrieval of information.

3.2.7 Audio shall be recorded in a clear, professional and concise manner at the same time as the video recording and shall include the same information as displayed on the screen. Special commentary shall be given for unusual conditions of streets, wetlands, structures, trees, etc.

3.2.8 All DVDs or USBs and their containers shall bear labels with the following information:

- a. DVD or USB Number
- b. Project Name and Number
- c. Project Site
- d. Date of Recording
- e. Location and Standing Limit of DVD or USB

END OF SECTION

SECTION 01450

CHEMICAL DATA QUALITY CONTROL

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 This section covers requirements for the Contractor's Chemical Data Quality Control (CDQC) for Remedial Action (RA) at the Roebling Steel OU5 – Superfund Site. This section shall be used for preparation of a Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP), laboratory booking, monitoring of subcontract laboratory performance, data validation, data reporting, and preparation of a chemical data final report. The UFP-QAPP shall contain the necessary technical detail and directions for all sampling and field measurements and specifies all quality assurance (QA) and quality control (QC) procedures required for planning, implementation and assessment of the RA.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of the standards below, the revision in effect at the time of contract award shall apply.

DEPARTMENT OF TRANSPORTATION (DOT)

40 CFR 261 Identification and Listing of Hazardous Wastes, Parts 106 to 179

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA-540-R-2017-001 EPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 or other EPA validation statement of work as applicable to the method

EPA-540-R-2017-002 EPA National Functional Guidelines for Organic Superfund Methods Data Review, January 2017 or other EPA validation statement of work as applicable to the method

EPA-540-R-014-013 Contract Laboratory Program Guidance for Field Samplers, October 2014

EPA Region 2 SOP HW-32 Policy for Implementing the National Strategy for Procuring Analytical Services for all OSWER Programs Standard Operating Procedure (SOP), Revision 7, August 2009.

EPA Region 2 HW-33A, 34A and 35A Hazardous Waste Support Section SOPs for CLP Organics Data Review for evaluating Low/Medium Volatile Organic Compounds (VOC), Trace VOCs, semi-volatile organic compound (SVOC) Revision 1. September 2016.

EPA Region 2 HW-36A and 37A Hazardous Waste Support Section SOPs for Pesticide, Revision 1. October 2016; and PCB Aroclors, Revision 0, June 2015.

EPA Region 2/SOP HW-3a, SOPs for (Metals) ICP-AES /ICP-MS Data Validation,

HW-3b, HW-3c	Mercury and Cyanide Data Validation. September 2016.
EPA/240/B-06/001	Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4, February 2006.
EPA/240/B-01/003	EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5. March 2001. Reissued 2006.
EPA/240/R-02/009	Guidance for Quality Assurance Project Plans, EPA QA/G-5, December 2002.
EPA 540/P-87/001	A Compendium of Superfund Field Operation Methods. December 1987.
EPA 540/R-93-071	Guidance on Systematic Planning using the Data Quality Objectives Process, February 2006.
EPA SW-846	Test Methods for Evaluating Solid Waste (Vol. IA, IB, IC, and II) (Third Edition, Rev. July 2014; Final updates I, II, IIA, IIB, and IIIA, IIIB, IV and V, August 2015.
EPA 505-B-04-900A	Intergovernmental Data Quality Task Force (IDQTF), Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Part 1 - Evaluating, Assessing, and Documenting Environmental Data Collection and Use Programs, March 2005 (Original). Optimized UFP-QAPP Worksheets, March 2012 (Revised).
EPA 505-B-04-900B	Intergovernmental Data Quality Task Force (IDQTF), Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Part 2B – Quality Assurance/Quality Control Compendium: Minimum QA/QC Activities, March 2005.
EPA 505-B-04-900C	Intergovernmental Data Quality Task Force (IDQTF), Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Part 2A – Workbook for UFP for QAPP, March 2005.
EPA/600/R-04/003	National Environmental Laboratory Accreditation Conference (NELAC) Standard, Chapter 5 – Quality Systems, June 2003 (or the 2009 NELAC Institute standards if already implemented by the applicable state accrediting body).
EPA/600/4-79/020	Methods for Chemical Analysis of Water and Wastes, March 1983.
Directive 9240.0-2C	Analytical Services Tracking System (ANSETS) directive for reporting non-CLP analytical services, November 2002.
Directive 9240.0-05A	EPA Specifications and Guidance for Contaminant-Free Sample Containers, EPA/540/R-93/051, December 1992, Office of Solid Waste and Emergency Response.

Directive 9200.1-103 Inclusion of Scribe into the Role of Tracking Superfund Sampling Data, November 2010,
<http://www.epa.gov/superfund/programs/clp/download/sampler/9200-1-103.pdf>

EPA Superfund Analytical Services/Contract Laboratory Program Statement of Work (SOW):

EPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods, Multi-Media, Multi-Concentration (ISM02.4), January 2017 (or current version).

EPA Contract Laboratory Program Statement of Work for Organic Superfund Methods, Multi-Media, Multi-Concentration, (SOM02.4), January 2017 (or current version).

EPA Region 2 Electronic Data Deliverable Comprehensive Specification Manual (current edition), <http://www.epa.gov/superfund/region-2-superfund-electronic-data-submission-documents>

NEW JERSEY ADMINISTRATIVE CODE (N.J.A.C.)

N.J.A.C. 7:14A New Jersey Pollutant Discharge Elimination System (NJPDES) Rules

N.J.A.C. 7:26 Solid and Hazardous Waste Management Regulations, February 2009

U.S. DEPARTMENT OF DEFENSE (DoD)

DoD QSM Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0, July 2013 or version 5.1, January 2017.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 200-1-6 Chemical Quality Assurance for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects, October 1997.

1.3 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 – SUBMITTAL PROCEDURES:

1.3.1 Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP); SD-01 Pre-Construction Submittals; GA

The UFP-QAPP shall be submitted to the Contracting Officer at least 30 calendar days prior to Pre-Work Conference meeting for approval in accordance with Paragraph 3.3.

1.3.2 ANSETS Data Requirement Form and Trip Report; SD-06 Test Reports; FIO

The Contractor shall submit an Analytical Services Tracking System (ANSETS) Data Requirement Form and Trip Report in accordance with Paragraph 1.6.3.

1.3.3 Analytical Data; SD-06 Test Reports; FIO

Hard copy and electronic copy of all the analytical data collected at the Site shall be submitted to the Contracting Officer in accordance with Paragraph 1.7.

1.3.4 Non-Conformance Reports; SD-06 Test Reports; FIO

Reports shall be submitted within 48-hours of the occurrence of any significant problem with sampling, analytical procedures, instrument calibration and maintenance, and project quality control. Significant problems shall include, without limitation, the items specified herein as requiring corrective actions by the Contractor.

1.3.5 Chemical Data Final Report (CDFR); SD-06 Test Reports; GA

The CDFR shall be submitted to the Contracting Officer within 20 calendar days after receiving the analytical results from the laboratory. The CDFR shall be submitted in accordance with Section 3.6 herein. Each report shall be labeled with the contract number, project name, and location.

1.3.6 Loam and Fill Material Testing Results; SD-06 Test Reports; GA

The Contractor shall submit loam and fill sample results for approval prior to the use of such sources in accordance with Paragraph 1.5.1.2. Test results shall be delivered to the Contracting Officer no later than 3 days prior to the placement of materials.

1.3.7 Waste Disposal Characterization Sample Results, SD-06 Test Reports, FIO

The Contractor shall submit the waste characterization sample results to support off-site recycling and disposal in accordance to Paragraph 1.5.1.3.

1.4 ACRONYMS

Acronyms used by the Contractor that pertain to chemical data quality control shall be clearly defined for all contract-related products and communications.

1.5 CHEMISTRY REQUIREMENTS

Chemical data shall be acquired, documented, verified and reported in a manner that assures that the precision, accuracy, and completeness requirements are achieved, as specified in the Contractors approved UFP-QAPP. The Contractor must demonstrate the analytical chemistry method's ability to meet the project data quality objectives (DQOs). DQO shall be as defined in U.S. Army Corps of Engineers (USACE) guidance EM 200-1-6 and documented in the UFP-QAPP.

The site-related contaminants are listed in Table 01450-1.

1.5.1 Data Quality Objectives (DQO)

1.5.1.1 Samples shall be acquired and chemical parameter measurements shall be performed in such a manner that the resulting data meets and supports data use requirements. Definitive quality data shall be acquired, documented, verified and reported to ensure that the specified data quality indicators (DQIs) (precision, accuracy, representativeness, comparability, completeness and sensitivity) measurement performance criteria are achieved. Data collected for evaluation that do not require data validation (such as for characterizing waste disposal, and for health and safety monitoring shall be of screening quality).

1.5.1.2 Loam and Fill Sampling

Samples of loam and fill from each offsite source shall be collected as stated in SECTION 02930 – LOAMING AND SEEDING and SECTION 02230 – EARTHWORK AND GRADING. Samples shall be analyzed for the parameters listed below.

- a. EPA target compound list (TCL) volatile organic compounds (VOCs)
- b. EPA TCL SVOCs
- c. EPA pesticides and polychlorinated biphenyls (PCBs)
- d. Extractable petroleum hydrocarbons (EPH)
- e. Radium 226 (Gamma Spectroscopy)
- f. Gamma Radiational Exposure Rate (Field Screening)
- g. EPA target analyte list (TAL) metals, mercury and cyanide
- h. Soil pH
- i. Any additional parameter listed under Alternative and Clean Fill Guidance for SRP Sites not part of EPA full TCL list.

Sample data shall be sufficient to demonstrate that imported loam and fill materials are free from chemical contamination and do not exceed NJAC 7:26D Residential Direct Contact Soil Cleanup Criteria (latest version) and NJAC 7:28-12 Remediation Standards for Radioactive Material. Analytical parameters for loam shall include, at a minimum, total organic carbon and nutrients (nitrogen, phosphate, and potassium). Sample data shall be sufficient to demonstrate that topsoil materials meet the NJDOTSS 917.01 and ASTM D5268 requirements.

1.5.1.3 Waste Disposal Characterization Sampling

The Contractor shall collect and analyze waste characterization samples in accordance with disposal facilities requirements for all liquid and solid wastes that require off-site disposal. Solid waste disposal sampling shall be performed by collecting representative composite samples from each waste type including, but not limited to, cleared and grubbed material, asphalt debris from demolition, excess excavated soil, and other waste generated during the RA. Until accepted by an offsite recycling or disposal facility, the Contractor shall store waste onsite segregated by waste type. Compositing scheme for solid waste samples shall be approved by the Contracting Officer. Samples shall be analyzed for waste characteristics to determine handling, transportation, and disposal requirements for each waste type. The number and volume of samples will be determined by the recycling and disposal facility(ies).

Standard analytical requirements for waste disposal characterization samples are listed below:

- a. Toxicity Characteristic Leaching Procedure (TCLP) - Metals
- b. TCLP - SVOCs

- c. TCLP - Pesticides
- d. TCLP – Herbicides
- e. TCLP – PCBs
- f. Paint Filter Test
- g. Moisture Content
- h. Corrosivity
- i. Ignitability
- j. Reactivity - Cyanide
- k. Reactivity - Sulfide

1.5.1.4 Air Monitoring

The Contractor shall conduct environmental air monitoring throughout the project. Air monitoring shall be performed as outlined in SECTION 01351 – SAFETY, HEALTH, AND EMERGENCY RESPONSE FOR CONTAMINATED SITES and SECTION 01362 – PERIMETER AIR MONITORING. The Contractor shall be required to monitor the air for Occupational Safety and Health Administration (OSHA) requirements, for the protection of its workers.

1.6 QUALITY ASSURANCE/QUALITY CONTROL ELEMENTS

The Contractor shall be responsible for the following quality assurance/quality control (QA/QC) elements necessary to monitor and ensure the quality of chemical data produced.

1.6.1 Analytical Testing Laboratories

1.6.1.1 General

1.6.1.1.1 The Contractor shall comply with the Superfund Field and Analytical Services Teaming Advisory Committee (FASTAC) policy as detailed in SOP HW-32 in selecting and implementing analytical services for this project. This policy requires use of the tiered decision tree for procuring Superfund analytical services for all non-time critical data collection projects. The decision tree is as follows:

- Tier 1: EPA Region II Division of Environmental Science and Assessment (DESA) Laboratory including Environmental Services Assessment Team (ESAT) support
- Tier 2: National analytical Services Contract Laboratories Program (CLP)
- Tier 3: Region Specific Analytical Services (SAS) Contract laboratories
- Tier 4: Contractor, Interagency Agreement (IAGs) and Field Contractor Subcontract laboratories

For this project, all samples and analyses are non-time-critical. The Contractor shall comply with the FASTAC policy, with the standard turn-around time (TAT) of 21 days for analyses and 42 days for validated data if samples are analyzed by DESA or a CLP laboratory.

1.6.1.1.2 The Contractor shall submit the analytical service request (ASR) form to the EPA Regional Sample Control Center (RSCC) via the EPA SharePoint® site a minimum of six weeks prior to mobilization of the sampling event. Prior to submittal to the EPA, the Contractor shall submit the analytical services request to the Contracting Officer for review and approval. The Contractor shall include in the ASR any proposed analytical subcontract laboratories to be used and justification for their use.

1.6.1.1.3 The ASR shall be submitted to EPA's SharePoint® site. The selected subcontract laboratory for analyses that cannot be accommodated by FASTAC Tiers 1 to 3 shall be approved by the EPA's Remedial Project Manager (RPM)'s Chief of the Hazardous Waste Support Branch and the USACE. The Contractor shall provide justification for use of a subcontract laboratory to the EPA RPM along with the ASR indicating the required analyses, turnaround times, special requests, etc. The subcontract laboratory shall meet the certification requirements listed in Paragraph 1.6.1.3.

1.6.1.1.4 The Contractor shall propose the analytical subcontract laboratories in the UFP-QAPP for the analytical services that cannot be accommodated through the DESA and/or CLP flex clause to achieve the required sample analyses for the project. The subcontract laboratory shall meet the certification requirements listed in Paragraph 1.6.1.3.

1.6.1.2 Subcontracted Laboratory Analytical Requirements

The Contractor shall provide chemical analyses to achieve the project DQO for all parameters by methods specified in the project specification or the approved UFP-QAPP.

1.6.1.3 Subcontract Laboratory Certification

Environmental laboratory services are to be provided only by laboratories compliant with the most recently published version of the DOD Quality Systems Manual (QSM), including the National Environmental Laboratory Accreditation Conference (NELAC) Standard Chapter 5 and Appendix requirements (EPA/600/R-04/003), holding a current National Environmental Laboratory Accreditation Program (NELAP) accreditation for all appropriate fields-of-testing (where applicable), and certified by the State of New Jersey. Before testing services can be performed by the laboratory, the Contractor shall verify the candidate laboratory's acceptability by reviewing their certifications and qualifications. NELAP accreditation information is to be provided annually. The laboratory shall notify the Contracting Officer immediately of any change in status of laboratory operations that may affect ongoing compliance with these requirements. The USACE/EPA may, at any time, conduct audits (including requests for pertinent data or information) that support an environmental laboratory's self-declaration of compliance with this policy. If the USACE/EPA finds the laboratory is in non-compliance, the Contractor shall utilize alternate, compliant laboratory services until such time as compliance is again demonstrated. Before performing environmental testing, the laboratory shall have access to the approved UFP-QAPP.

1.6.1.4 Subcontracted Laboratory Performance

The Contractor shall provide oversight to ensure continued acceptable analytical performance and shall establish communication protocols and procedures to address data deficiencies noted by review of quality control sample results. The Contractor shall provide and implement a mechanism for providing analytical laboratories with the approved UFP-QAPP, to monitor analytical performance and to ensure corrective action procedures are implemented.

1.6.2 Contractor QC Sample Collection and Analysis

QC samples shall be collected and analyzed by the Contractor in accordance with EPA's Contract Laboratory Program Guidance for Field Samplers (EPA 2014) (EPA 540-R-014-013) and other guidance documents and the Contractor's approved UFP-QAPP. QC samples shall be collected as described in the Contractor's approved UFP-QAPP. The following summarizes the minimum QC sampling requirements:

- One field (or equipment/rinsate) blank shall be collected at a frequency of one per decontamination event, not to exceed one per day, for each non-dedicated and non-disposable equipment type and for each sample matrix to assess the effectiveness of equipment decontamination.
- One cooler temperature indicator or “temperature blank” will be placed in each cooler containing samples for analysis to verify that samples have been maintained between 0 and 6 degrees Celsius (° C).
- One matrix spike/spike duplicate (MS/MSD) will be collected at a rate of one per sample delivery group (SDG), as defined by EPA’s Contract Laboratory Program Guidance for Field Samplers (EPA 540-R-014-013) to demonstrate the accuracy of laboratory analysis. MS/MSDs are not required for VOC and SVOC analyses if the samples are analyzed by a CLP laboratory.

1.6.3 Documentation of Sample Collection and Analysis

1.6.3.1 CLP/DESA Laboratory

The Contractor shall submit a trip report to the EPA RSCC within seven days of collection of the final sample in a CLP Case for samples analyzed by a CLP laboratory. The trip report shall include sample locations, dates of collection and shipment, identification of QC samples, and names of laboratories to which samples were submitted. The trip report shall be uploaded to the EPA SharePoint® site - a notification will be sent from the site to the RSCC coordinator, Ms. Christina Leung (Leung.Christina@epa.gov).

1.6.3.2 Subcontract Laboratory

The Contractor shall submit an ANSETS Data Requirement Form documenting analytical services provided by any subcontracted laboratory. (Attachment 5, Exhibit 1 of EPA Region II SOP HW-32). The form shall include the laboratory name and location, number of samples, analytical methods, and costs and be submitted at the end of each month, by the 5th of the next month following sample collection, via email to via email to Christina Leung (Leung.Christina@epa.gov), Jennifer Feranda (Feranda.Jennifer@epa.gov), Robert Toth (Toth.Robert@epa.gov), and the Contracting Officer.

1.6.4 Review of Primary Laboratory Data

The Contractor shall be responsible for the independent data review of the entire data set.

1.6.5 Data Validation

The Contractor shall validate all analytical data, not including screening data, for any samples analyzed by the Contractor’s subcontract laboratory. The inorganic and organic data shall be evaluated in accordance with EPA Region 2 Standard Operating Procedures, as applicable, or in accordance with EPA Contract Laboratory Program National Functional Guidelines. Items listed below shall be assessed as part of the data validation. The data validation criteria shall be consistent with project DQOs and discussed in the approved UFP-QAPP. The Contractor shall prepare a data validation report, which shall include a summary of the independent data reviewer’s findings. The summary shall consist of a table listing each QC result failing established criteria, the established criteria, and the validation actions. Comments shall be included

on how these data affect the validity of analytical results and data usability including data qualifiers used. The data validation report shall include, but not be limited to, the following parameters:

- Data completeness
- Method blanks and field blanks
- Holding time including sample integrity
- Surrogate recovery
- Instrument calibration
- Matrix spikes
- Continuing calibration verification
- Laboratory and field duplicate results
- Laboratory control samples
- Verification of sample results

The Contractor shall have the laboratory data validated by an organization independent of the organization generating the data. Validation reports shall be submitted after each phase of work. The data validation reports shall be submitted as an appendix to the Chemical Data Final Report discussed in Paragraph 3.6.

1.7 ANALYTICAL DATA

1.7.1 Hard Copy

The chemistry data packages shall be re-produced and provided to the Government no later than 4 weeks after receipt of the analytical data package from the laboratory. The chemistry data package shall contain information to demonstrate that the project's DQO have been fulfilled.

1.7.2 Electronic Data Deliverables

The Contractor shall prepare and submit to EPA a final electronic data deliverable (EDD) for all samples collected in accordance with the procedures and requirements set forth in the Comprehensive Specification Manual (current edition) and as described on the EPA Region 2 website found in the links below.

https://www.epa.gov/sites/production/files/2016-03/documents/r2comprehensivemanual_mar2016.pdf

<https://www.epa.gov/superfund/epa-superfund-electronic-data-submission-multi-regions-edd>

The EDD shall include data from including but not limited to sample locations (horizontal coordinates and surface elevation) and sample results. The EDD shall also include an updated geo-referenced electronic base map in AutoCAD drawing exchange format (DXF) showing site features and well locations.

1.8 QUALIFICATIONS

1.8.1 Chemical Quality Control Officer

As a minimum, the Contractor's Chemical Quality Control Officer shall have a Bachelor's Degree (B.A. or B.S.) in chemistry, three years of experience with Hazardous Toxic and Radioactive Waste (HTRW) Quality Control including hazardous waste manifesting. The Chemical Quality Control Officer shall ensure that all chemistry related objectives including responsibilities for DQO definitions, sampling and analysis, project requirements for data documentation and validation, and final project reports are attained. The Chemical Quality Control officer need not be present on site during routine sampling, but shall be available for consultation with Government.

1.8.2 Project Chemist

At a minimum, the Contractor's Project Chemist shall have: a B.A. or B.S. degree in chemistry; three years of experience related to investigations, studies, design and remedial actions at HTRW sites; two field seasons of experience in calibrating and operating various field monitoring devices; and two years of experience in the operation of an HTRW commercial laboratory with standard analytical chemistry methods common for analyzing soil, water, air and other materials for chemical contamination assessment, including data for hazardous waste manifesting. The Project Chemist shall ensure that all chemistry-related goals of the program are attained.

1.8.3 Environmental Sampler

At a minimum, the Contractor's Environmental Sampler shall have a B.A. or B.S. degree in chemistry or a closely related scientific/technical field, three years of experience in the development and preparation of UFP-QAPPs, one year of experience in and knowledge of EPA methods for collecting environmental and hazardous waste samples.

1.9 COORDINATION MEETING

After the Pre-Construction Conference, before any sampling or testing, the Contractor shall meet with the Contracting Officer at the construction site to discuss the Contractor Quality Control (CQC) Plan and the UFP-QAPP. The coordination meeting shall be simultaneous to any CQC coordination meeting required in SECTION 01451 – CONTRACTOR QUALITY CONTROL unless otherwise indicated or directed. A list of definable features of work that involve chemical measurements shall be agreed upon. At a minimum, the soil matrix shall be a definable feature of work. Management of the chemical data quality system including project DQO, project submittals, chemical data documentation, chemical data assessment, required sampling and analysis protocols, and minimum data reporting requirements shall be agreed upon. The meeting will serve to establish an interrelationship between the Contractor's chemical data quality management and Government chemical quality assurance requirements. Minutes of the meeting shall be documented by the Contractor and shall be signed by both the Contractor and the Contracting Officer. The minutes shall include any or all unresolved chemical issues along with the conditions for resolution and shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor shall be responsible for chemical sample acquisition, sample analysis, measurements of chemical parameters, and CDQC. An effective CDQC system that meets the requirements for the chemical measurement DQOs applicable to the project shall be established. The CDQC system shall consist of chemical quality management staff responsible for the sampling and measurement plans, analytical procedures, minimum data reporting requirements and the organization necessary to produce the required chemical data. The system shall cover chemical measurements pertaining to and required for Contractor- and subcontractor-produced chemical data. The Contractor shall control field sampling, and testing in conjunction with remedial activities to meet all DQOs, and ensure completion of work within the required time.

3.2 CONTRACTOR QUALITY CONTROL PLAN

3.2.1 General

In addition to the quality control requirements specified in SECTION 01451 - CONTRACTOR QUALITY CONTROL, the CQC Plan shall incorporate the qualifications, authority and responsibilities of all chemical quality management and support personnel.

3.2.2 Chemistry Elements of the CQC Plan

To cover contract related chemical measurements by the Contractor and all subcontractors, the CQC Plan shall include the following as a minimum:

3.2.2.1 Qualifications

Names, education, experience qualifications, authorities, and decision-making responsibilities of all chemical quality management and support personnel. The CQC Plan shall contain a copy of a letter from the project QC manager designating and authorizing a Chemical Quality Control Officer and chemical quality control organization staff.

3.2.2.2 Authority and Responsibility

A diagram, flow chart, or figure clearly depicting the chemical data quality management and support staff and the authority and responsibility of each for chemical sampling and analysis, procedures for corrective actions, deliverables and submittals, deviations and changes, chemical quality documentation, data validation, minimum data reporting requirements, and DQO for chemical parameter measurement by the Contractor and subcontractors. The contents of this section of the CQC Plan shall be included in the applicable "Project Organization" elements of the QAPP.

3.3 Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP)

3.3.1 General

The UFP-QAPP shall describe all chemical parameter measurements for all phases of the remedial action. The Contractor must provide sufficient detail for the project team to obtain data that meet the DQOs of

the project. The Contractor's QAPP shall be in accordance with the UFP-QAPP Manuals referenced in Paragraph 1.2 and must be approved by USACE and EPA prior to data collection.

3.3.2 Level of Detail

The UFP-QAPP shall contain necessary technical detail and direction on planning, implementing, assessing, evaluating data, corrective actions and reconciliation of completed tasks with documented planned objectives. The level of detail in the UFP-QAPP shall be such that any technically-competent personnel unfamiliar with the Site can follow the plan and perform all required work.

The UFP-QAPP shall contain necessary technical detail and direction for the field personnel to perform all onsite activities required to attain project DQO, including: collection of samples for offsite chemical analysis, shipment of samples for offsite analyses, and data documentation and reporting requirements. It shall contain sufficient direction and detail that analytical laboratory personnel understand the analytical methods required and the project required reporting limits, project data quality indicators (DQIs) measurement performance criteria, project data validation and reporting requirements.

3.3.3 Appendices

The Appendices section of the UFP-QAPP shall contain all Contractor standard forms, project figures and tables, and standard operating procedures (SOPs).

3.3.4 The CLP/DESA Laboratory – Contract Laboratory Program Guidance for Field Samplers (EPA 540-R-014-013), October 2014 procedure shall be followed for sample packing and shipment.

3.3.5 All Department of Transportation (DOT) regulations under 40 CFR 261 shall be followed regarding shipment of the samples.

3.4 CONTROL OF CHEMICAL DATA QUALITY

3.4.1 General

The Contractor's CDQC program shall ensure that sampling and analytical activities and the resulting chemical parameter measurement data meet the DQOs and the requirements of the UFP-QAPP. The Contractor shall utilize the three-phase control system that includes a preparatory, initial and follow up phase for each definable feature of work. The Contractor's three phase chemical data control process shall ensure that data reporting requirements are achieved and shall be implemented according to SECTION 01451 - CONTRACTOR QUALITY CONTROL. When possible, the three phase chemical data control process shall be combined with that under SECTION 01451 - CONTRACTOR QUALITY CONTROL.

3.4.2 Three Phase Process

3.4.2.1 The preparatory phase shall include a review of the specification, UFP-QAPP, and all relevant SOPs for the chemical parameter measurement and/or chemical sample acquisition and shipment. It shall include a physical examination of all required forms, materials and equipment to ensure conformance with the UFP-QAPP and that all materials are on site. It shall include a demonstration of sampling procedures by the Contractor's field sampling personnel.

3.4.2.2 The initial phase shall be performed at the initiation of each definable feature of work by the CQC Representative to confirm compliance with the UFP-QAPP, including: instrument calibration, operation and performance checks, sample acquisition, labeling, and shipment in accordance with required SOPs, sampling equipment decontamination, and completion of all required documentation.

3.4.2.3 The follow up phase shall require daily inspections to ensure compliance with the UFP-QAPP.

3.5 SUBCONTRACT LABORATORIES

3.5.1 General

Laboratory certification requirements shall be in accordance with Paragraph 1.6.1.3. The Contractor may be able utilize its own laboratory to achieve the required sample analyses on condition that requirements in Section 3.5.2 are met.

3.5.2 Laboratory Analytical Requirements

The Contractor shall comply with FASTAC policy. In the event that samples are not accepted by DESA or CLP, the Contractor shall have the capability to provide all chemical analyses specified in this contract through the Contractor's and/or its subcontractor's laboratory. The Contractor shall provide chemical analyses for all parameters by methods specified in the project specifications or UFP-QAPP to achieve the project DQOs.

3.5.3 Laboratory Performance

If a subcontract laboratory is required, the Contractor shall monitor and ensure continued acceptable analytical performance and shall establish a procedure to address data deficiencies noted by review and/or quality assurance sample results. The Contractor shall provide and implement a mechanism for providing analytical laboratories with the QAPP, for monitoring the laboratories' performance and for performing corrective action procedures. The Contractor shall acquire analytical services with NELAP-accredited and State of New Jersey-certified laboratories.

3.6 CHEMICAL DATA FINAL REPORT (CDFR)

The Contractor shall produce a CDFR, which includes a summary of quality control practices employed and all chemical parameter measurement activities, after project completion. This includes, but is not limited to, all data analyzed by the Contractor's laboratory and/or subcontract laboratories, and shall include all definitive data. At a minimum, the CDFR shall contain the following:

- Summary of project scope and description
- Summary of any deviations from the approved UFP-QAPP or the design specifications
- Summary discussion of resulting data including achieving data reporting requirements
- Summary of DQO parameters including achieving sampling project specific DQO
- Presentation and evaluation of the data to include an overall assessment on the quality of the data for each method and matrix

- Internal QC data generated during the project, including tabular summaries correlating sample identifiers with all blank, duplicates, other QC samples, and batch identifiers
- A list of the affected sample results for each analyte (indexed by method and matrix) including the appropriate data qualifier flag (J, R, etc.), where sample results are potentially impacted by quality control criteria
- Summary of field and laboratory oversight activities, providing a discussion of the reliability of the data, QC problems encountered, and a summary of the evaluation of data quality for each analysis and matrix as indicated by the laboratory QC data and any other relevant findings
- Conclusions and recommendations
- Appendices containing chemistry data packages for all subcontract laboratory data (hardcopy and electronic copy) and data validation reports

3.7 NOTIFICATION OF NON-COMPLIANCE

The Government will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice.

Table 01450-1
Record of Decision Target Cleanup Levels - Soil

Contaminant of Concern	Target Cleanup Level (mg/kg)	Contaminant of Concern	Target Cleanup Level (mg/kg)
Volatile Organic Compounds		Pesticides and PCBs (continued)	
Trichloroethene	60	Dieldrin	4
1,1,2,2-Tetrachloroethane	3	Endosulfan sulfate	18000
Vinyl Chloride	3	Endrin aldehyde	10000
1,1-Dichloroethene	NL	Aroclor 1242	490
1,2-Dichloroethane	NL	Aroclor 1248	490
Semi-Volatile Organic Compounds		Aroclor 1254	490
2,4-Dinitrotoluene	0.8	Aroclor 1242	490
Acenaphthene	100,000	Aroclor 1260	490
Benzo(a)anthracene	900	Inorganics	
Benzo(a)pyrene	90	Antimony	5
Benzo(b)fluoranthene	900	Arsenic	20
Benzo(g,h,i)perylene	NL	Barium	700
Benzo(k)fluoranthene	900	Beryllium	0.1
bis(2-ethylhexyl)phthalate	46,000	Cadmium	1
Chrysene	9,000	Chromium	38
Dibenzo(a,h)anthracene	90	Copper	600
Hexachlorobenzene	100	Lead	400
Indeno(1,2,3-cd)pyrene	900	Manganese	NC
Pentachlorophenol	30	Mercury	1
Phenanthrene	NC	Nickel	130
Pesticides and PCBs		Silver	34
4,4'-DDD	3000	Thallium	0.7
4,4'-DDE	2000	Vanadium	370
Aldrin	40	Zinc	1500

Source: United States Environmental Protection Agency. 2003. *Record of Decision, Operable Unit 5 and Amendment to Operable Unit 3 Selected Remedy, Roebing Steel Superfund Site, Florence Township, Burlington, County, New Jersey*. September.

Acronyms:

mg/kg – milligram per kilogram

NC – no criterion was derived for this contaminant

NL – not listed as a contaminant of potential concern for soil

PCB – polychlorinated biphenyl

TABLE 01450-2
Data Quality Objectives for Chemical Parameters

Data Use	Parameter	Precision (Relative Percent Difference)		Accuracy (Percent Recovery)		Completeness
		Field Duplicate	Laboratory Duplicate or MS/MSD	Laboratory Control Sample ¹	Matrix Spike ²	
Waste Characterization	TCLP Metals	NA	≤ 20%	80-120%	75-125%	90%
	TCLP SVOCs	NA	≤ 50%	³ NA – use DMC limits	9-123%	
	TCLP Pesticides	NA	≤ 30%	30-150%	35-140%	
	TCLP Herbicides	NA	≤ 30%	30-150%	35-140%	
	TCLP VOCs	NA	≤ 20%	³ NA – use DMC limits	60-145%	
	TCLP PCBs	NA	≤ 20%	50-150%	29-135%	
	Paint Filter Test	NA	≤ 25%	NA	NA	
	Moisture Content	NA	≤ 25%	NA	NA	
	Reactivity, Corrosivity, and Ignitability	NA	≤ 25%	NA	NA	
Fill and Loam Characterization	TCL VOCs	< 50	< 20%	³ NA – use DMC limits	61-145%	
	TCL SVOCs	< 50	< 50%	³ NA – use DMC limits	10-150%	
	TCL Pesticides	< 50	< 50%	30-150%	23-140%	
	TCL PCBs	< 50	< 20%	50-150%	29-135%	
	TAL Metals	< 50	< 20%	80-120%	75-125%	
	Total Organic Carbon	NA	< 20%	80-120% [mid-range Continuing Calibration Verification standard]	<3 s [quadruplicate analysis]	
	Nitrogen, Phosphate, Potassium	<100	<25	NA	NA	
	pH	NA	< 20%	NA	NA	

Footnotes:

1. The laboratory established control limits may be used in place of the listed control limits as approved by the Contracting Officer.
2. Limits are advisory. The laboratory must calculate and document analytical precision and accuracy as per their certification requirements. MS QC tests shall use samples from this site to evaluate matrix impacts on the results for this site.
3. Method SOM02.4 does not include laboratory control samples for SVOC and VOC analysis. DMC limits vary by compound.

DMC: deuterated monitoring compound

NA: Not Applicable

PCB: polychlorinated biphenyl

s: standard deviations

TCLP: toxicity characteristics leaching procedure

TABLE 01450-3
Analytical Methods for Chemical Parameters

Data Use	Parameter	Analytical Method	
		Extraction	Analysis
Waste Characterization	TCLP VOCs	SW-846 1311, 5030B	SW-846 8260B
	TCLP SVOCs	SW-846 1311, 3510C/ 3520C	SW-846 8270D
	TCLP Pesticides	1311, 3510C/ 3520C	SW-846 8081B
	TCLP Herbicides	SW-846 1311, 8151A	SW-846 8151A
	TCLP Metals	SW-846 1311, 3010A	SW-846 6010C, 7470A
	PCBs	SW-846 3540C/3541	SW-846 8082A
	Paint Filter Test	NA	SW-846 9095B
	Reactivity, Corrosivity, and Ignitability	NA	Reactivity-Cyanide: SW-846 9014; Reactivity-Sulfide: SW-846 9034; Corrosivity: SW-846 1110A/9040C; Ignitability: SW-846 1010A
	Moisture Content	NA	ASTM D 2216 - 10
Fill and Loam Characterization	TCL VOCs	NA	SOM02.4
	TCL SVOCs	NA	SOM02.4
	EPH	NA	NJDEP EPH Method Revision 3
	TCL Pesticides/PCBs	NA	SOM02.4
	TAL Metals	NA	ISM02.4
	RAD 226	NA	HASL-300 or EPA approved method
	Total Organic Carbon	NA	SW-846 9060A
	Nutrients	Potassium and phosphate – SW-846 3050B or Mehlich Nitrogen – KCl	Potassium and phosphate -SW-846 6010D Nitrogen - KCl-extraction/Cd-reduction or other approved method
	pH	NA	ASTM D4972 -13

END OF SECTION

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish the labor, supervision, materials, equipment and services required to prepare a Contractor Quality Control (CQC) Plan for approval by the Contracting Officer and to perform Contractor quality control in accordance with the approved CQC Plan.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL

ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

ENGINEERING MANUALS

EM 385-1-1 US Army Corps of Engineers Safety and Health Requirements Manual, November 2008

EM 385-1-92 US Army Corps of Engineers Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, November 2008

ER 1110-1-12 Engineering and Design Quality Management, September 2006

1.3 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. Submittals shall be made as specified in SECTION 01330 – SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements and are submitted in accordance with the date on the submittal register. CQC personnel shall also make physical checks of materials and equipment before installation to ensure compliance with approved submittals.

1.3.1 CQC Plan; SD-01 Pre-Construction Submittals; GA

The Contractor shall develop and submit a detailed CQC Plan to the Contracting Officer for approval, at least 14 calendar days prior to the Pre-Construction Quality Control Conference.

1.3.2 CQC Organizational Changes; SD-03 Product Data; GA

Any CQC organizational changes made during the contract period shall be submitted to the Contracting Officer for acceptance.

1.3.3 CQC Report; SD-03 Product Data; FIO

The Contractor shall submit a CQC Report as specified in Paragraph 3.8 – DOCUMENTATION.

1.3.4 Coordination Meeting Minutes; SD-03 Product Data; GA

The Contractor shall record the minutes of the Coordination Meeting also called Pre-Construction Quality Control Conference in SECTION 01201 – PRE-CONSTRUCTION AND PRE-WORK CONFERENCES and as described in Paragraph 3.3, including significant proceedings and decisions, and within five calendar days after the meeting furnish 10 copies of the minutes to the Contracting Officer. After the Contracting Officer's review and approval, the Contractor shall distribute copies to each participant in the meeting and to parties affected by decisions made at the meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction". The CQC system shall consist of plans, procedures, and organization necessary to produce an end product that complies with the contract requirements. The system shall cover all construction operations, both on and off site, and shall be keyed to the proposed construction sequence. In this section the term "construction" shall include all items of work, activities, materials, and equipment as indicated in the Contract Documents. Other sections of the Contract Documents may also require separate, specially qualified individuals in such areas as chemical data acquisition, sampling and analysis, medical monitoring, industrial hygiene, safety, etc. The CQC organization shall coordinate the activities of these individuals. The Project Superintendent shall be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with quality requirements specified in the contract. The Project Superintendent in this context shall mean the onsite individual with the responsibility for the overall management of the project including logistics, quality and production. The Project Superintendent shall maintain a physical presence at the Site at all times when work is being performed, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction-related activities at the Site.

3.2 QUALITY CONTROL PLAN

3.2.1 General

The Contractor shall furnish for review by the Contracting Officer, not later than 90 calendar days after receipt of Notice to Proceed, the CQC Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction". The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Contracting Officer will consider an interim plan for the first 90 calendar days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the definable features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.2 Content of the CQC Plan

The CQC Plan shall include, at a minimum, the following to cover all construction operations, both on and off site, including work by subcontractors, fabricators, suppliers, and purchasing agents:

3.2.2.1 A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three-phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to an officer in the Contractor's organization above the Project Superintendent. The CQC System Manager is responsible for quality only.

3.2.2.2 The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

3.2.2.3 A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authority to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

3.2.2.4 Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

3.2.2.5 Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Laboratory facilities will be approved by the Contracting Officer. The Contractor shall incorporate all tests required by the Contract Documents to derive the list of testing information which shall be presented in matrix form as part of the CQC Plan. This matrix shall be suitable for use by the Contractor and the Government as a checklist to control testing to be done on the contract. The Contractor shall coordinate any additional test submission or plan requirements with the appropriate specialized specification section, if applicable.

3.2.2.6 Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation. The Contractor shall provide a matrix of Preparatory and Initial Inspections including specification reference paragraph, the name of the Definable Feature of Work (DFW), and spaces for date performed, results, and names of attendees.

3.2.2.7 Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

3.2.2.8 Reporting procedures, including proposed reporting formats.

3.2.2.9 A list of the DFWs. A DFW is a task that is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there is frequently more than one definable feature under a particular section. This list shall cover all features of work on the project, and shall be agreed upon during the coordination meeting.

3.2.2.10 A brief explanation of the duties of the CQC organization with respect to safety. A separate Accident Prevention Plan and Hazards Analysis is required for submission and acceptance.

3.2.2.11 Contractor's plan for training all CQC personnel in the CQC System. Contractor's definition of their internal QA/QC practices used to ensure that the

- reviews to be performed (for example, technical reviews, independent reviews, and specialized reviews)
- general criteria for acceptability and the method of documenting that acceptability
- any qualification requirements applicable to the reviewers

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on ability to achieve satisfactory performance during the construction. The Contracting Officer reserves the right to require the Contractor to make changes in its CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed changes. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Pre-Work Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer and discuss the CQC System. The initial plan submitted must be found acceptable by the Government before the Coordination Meeting can be held. During the meeting, a mutual understanding of the system details

will be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of the Contractor's management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Contractor and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC System or procedures that may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. The number of CQC personnel shall be increased as required during times of high construction workload. The Contractor shall provide a CQC organization that shall be at the Site at all times during progress of the work and with complete authority to take any action necessary to ensure compliance with the contract. All CQC staff members shall be subject to acceptance by the Contracting Officer. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the Site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within its organization at the Site of the work who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate of construction management, or shall hold a state Professional Engineer's license, with a minimum of 2 years construction experience on construction similar to this contract, including one year as a QC representative. The CQC System Manager may also be a construction person with a minimum of 4 years in related work, including one year as a QC representative. This CQC System Manager shall be on the Site at all times during construction and shall be employed by the Contractor. An alternate for the CQC System Manager shall be identified in the CQC Plan to serve in the event of the CQC System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager. The CQC System Manager shall be assigned no duties other than quality control.

3.4.3 Organizational Expertise

The CQC organization, which includes the CQC System Manager and additional qualified personnel, must at a minimum possess general corporate technical knowledge of all aspects of the project, and must successfully execute the CQC System on the entire project. Individuals possessing experience in specialized areas shall be added to the organization as required during periods when such specialty areas are being executed. Examples of such specialized areas would include excavation, landscaping, surveying, chemical data acquisition, hazardous material removal and disposal, medical monitoring, etc..

The Contractor must demonstrate that such additional qualified personnel have received sufficient training and indoctrination into the CQC System, and that these personnel properly execute the requirements of the CQC System within their areas of expertise.

3.4.4 Additional Requirement

In addition to the above experience and education requirements, the CQC System Manager shall have completed within the last five years the course titled “Construction Quality Management for Contractors”. This course is given at a cost of \$25 by Government personnel and is of a two-day duration. The Government will provide one instruction manual for the course.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC Organization at full strength at all times. When it is necessary to make changes to the organization, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 CONTROL

Contractor quality control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control (preparatory, initial and follow up) shall be conducted by the CQC System Manager for each definable feature of work as follows:

3.5.1 Preparatory Phase

This phase shall be performed prior to beginning work on each DFW after all required plans/documents/materials are approved/accepted, and after copies are at the Site, and shall include:

3.5.1.1 A review of each paragraph of applicable specifications, references, codes and standards. A copy of those sections of referenced codes and standards applicable to the portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

3.5.1.2 A review of the Contract Drawings.

3.5.1.3 A check to ensure that all materials and/or equipment have been tested, submitted, and approved.

3.5.1.4 Review of provisions that have been made to provide required control inspection and testing.

3.5.1.5 Examination of the work area to ensure that all required preliminary work has been completed and is in compliance with the contract.

3.5.1.6 A physical examination of required materials, equipment, and sample work to ensure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

3.5.1.7 A review of the appropriate activity hazard analysis to ensure safety requirements are met per EM 385-1-1, "Safety and Health Requirements Manual".

3.5.1.8 Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

3.5.1.9 A check to ensure that the portion of the plan for the work to be performed has been approved by the Contracting Officer.

3.5.1.10 Discussion of the initial control phase.

3.5.1.11 The Contracting Officer shall be notified at least 48 hours in advance of beginning the preparatory control phase meeting. This phase shall include a meeting conducted by the CQC System Manager and attended by the Superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall clearly indicate its intent and plan for communication of the results of the preparatory phase to applicable workers, to include materials, construction methods, workmanship standards, safety considerations and procedures, and preparatory phase meeting minutes.

3.5.2 Initial Phase

This phase shall be accomplished at the beginning of a DFW when the accomplishment of a representative sample of the work is impending. The following shall be accomplished:

3.5.2.1 A check of the portion of work done to ensure that it is in full compliance with contract requirements.

3.5.2.2 Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

3.5.2.3 Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

3.5.2.4 Resolve all differences.

3.5.2.5 Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity hazard analysis with each worker.

3.5.2.6 The Contracting Officer shall be notified at least 48 hours in advance of beginning the initial phase meeting. This phase shall include a meeting conducted by the CQC System Manager and attended by the Superintendent, other CQC personnel (as applicable), the foreman responsible for the definable feature and the work crew(s) for the DFW. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location (i.e. CQC Report number) of initial phase shall be indicated for future reference and comparison with follow-up phases.

3.5.3 Follow-Up Phase

Daily checks shall be performed to ensure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular DFW. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional DFWs that may be affected by deficient work. The Contractor shall not build upon or conceal non-conforming work.

3.5.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same DFW if the quality of ongoing work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a DFW is resumed after a substantial period of inactivity; or if other problems develop.

3.5.5 Definable Feature of Work: Definition and Discussion

A DFW is a portion of work consisting of materials, equipment, supplies and procedures which are closely related to each other, have the same control and shall be accomplished by the same work crew to completion. A DFW must be sufficiently small so that control of the work (i.e. communication of requirements to workers, inspection of materials and workmanship and correction of deficiencies) will be easily accomplished. Some examples of DFWs are:

- Preparing Site
- Installing temporary facilities
- Clearing/grubbing
- Controlling soil erosion and sediment controls
- Stormwater drainage features
- Subgrading
- Final grading and installing soil cover
- Sampling and acquiring chemical data
- Restoring Site

3.5.6 CQC personnel shall be responsible for tracking and promptly correcting deficiencies. The Construction Contractor Module of the Resident Management System for Windows, Quality Control System (QCS), shall be used to track deficiencies in accordance with SECTION 01312 – QUALITY CONTROL SYSTEM. The “List of Outstanding Deficiencies” form provided at the end of this specification shall be used to supplement the documentation for deficiencies that are not available in QCS, and shall be kept current.

3.5.7 CQC personnel shall be responsible for preparing daily CQC reports in accordance with Paragraph 3.8. Daily CQC reports shall be submitted to the Contracting Officer no more than 24 hours after the date for which they are prepared. Reports shall indicate factual evidence of CQC activities including the preparatory meetings, initial phase meetings, and follow-up inspections including location of inspections and deficiencies found, tests performed and results, submittals reviewed, health and safety, etc. Forms included at the end of this specification shall be used as the basis of daily CQC reports in accordance with Paragraph 3.9. The Contractor shall fill in all blanks on daily CQC reports.

3.6 TESTS

3.6.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product that conforms to contract requirements. Upon request, the Contractor shall furnish to the Contracting Officer duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a laboratory that has been assurance inspected by USACE within the last two years. The Contractor shall perform the following activities and record and provide the following data:

3.6.1.1 Verify that testing procedures comply with contract requirements.

3.6.1.2 Verify that facilities and testing equipment are available and comply with testing standards.

3.6.1.3 Check test instrument calibration data against certified standards.

3.6.1.4 Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

3.6.1.5 Results of all tests performed, both passing and failing, shall be recorded on the CQC report for the date performed. Specification paragraph reference, location where tests were performed, and the sequential control number identifying the test will be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date performed. An informational copy of results of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.6.2 Testing Laboratories

The listing of validated testing laboratories is available at <http://gsl.erdc.usace.army.mil/SL/MTC/>.

3.6.2.1 Capability Check

The Government reserves the right to check laboratory equipment and calibration in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and aggregate shall meet criteria detailed in ASTM D3740 and ASTM E329. The Government requires a USACE capability check of the laboratory that the Contractor proposes to perform tests on soils, concrete, asphalt, and aggregate. If the laboratory proposed has not had the required USACE capability check within the last two years, the check will be performed by USACE at a cost of \$7,200 to the Contractor. This cost shall be paid by the Contractor via check directly to the USACE Laboratory performing the inspection and report.

3.6.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor shall be assessed a charge of \$7,200 to reimburse the Government for each succeeding recheck of the laboratory or the check of a subsequently selected laboratory.

3.6.3 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the USACE-designated Quality Assurance (QA) laboratories.

Coordination of each specific test, exact delivery location, and dates will be made through the New York District, USACE. The Contractor shall ensure sufficient notice is given to USACE prior to sample delivery.

3.7 COMPLETION INSPECTION

3.7.1 Punch-Out Inspection

Near the completion of all work or any increment thereof established by a completion time stated in the Special Clause titled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications. Such a list of deficiencies shall be included in the CQC documentation as required herein, and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished the Contractor shall notify the Government that the facility is ready for Government's "Pre-Final" inspection.

3.7.2 Pre-Final Inspection

The Contracting Officer will perform this inspection to verify that the project has been completed. A Government "Pre-Final Punch List" will be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected and so notify the Contracting Officer so that a "Final" inspection with the U.S. Environmental Protection Agency (EPA) can be scheduled. Any items noted on the "Pre-Final Punch List" shall be corrected in a timely manner. These inspections and any deficiency corrections required shall be accomplished within the time slated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

3.7.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the Superintendent or other primary management person and the Contracting Officer's representative will be in attendance at this inspection. Additional Government personnel including, but not limited to, those from EPA, USACE and state and local officials may also be in attendance. The Final Acceptance Inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final Inspection. Notice shall be given to the Contracting Officer at least 14 calendar days prior to the Final Acceptance Inspection and

shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, shall be complete and acceptable by the date scheduled for the Final Acceptance Inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause titled "Inspection of Construction".

3.8 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on the applicable forms, CQC Report, List of Outstanding Deficiencies, CQC Test Report List, and Record of Preparatory and Initial Inspections that includes, at a minimum, the following information:

- 3.8.1 Contractor/subcontractor and their area of responsibility.
- 3.8.2 Equipment with hours worked, idle, or down for repair.
- 3.8.3 Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- 3.8.4 Test and/or control activities performed with results and references to Contract Document requirements. The control phase should be identified (Preparatory, Initial, or Follow-Up). List deficiencies noted along with corrective action.
- 3.8.5 Quantity of materials received at the Site with statement as to acceptability, storage, and reference to Contract Document requirements.
- 3.8.6 Submittals reviewed, with contract reference, by whom, and action taken.
- 3.8.7 Offsite surveillance activities, including actions taken.
- 3.8.8 Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- 3.8.9 Instructions given/received and conflicts in the Contract Documents.
- 3.8.10 Contractor's verification statement.

These records shall include a description of trades working on the project, the number of personnel working, weather conditions encountered, and any delays encountered. "N/A" shall be entered into any field for which no entry is intended. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Contracting Officer daily within 24 hours after the date(s) covered by the report, except that reports need not be submitted for days on which no work is performed. At a minimum, one report shall be

prepared and submitted for every seven days of no work and on the last day of a non-work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. All documentation is expected to be legible and complete.

3.9 SAMPLE FORMS

3.9.1 The 2-page form at the end of this section shall be used for the basic CQC Report. CQC personnel shall attach continuation sheets as required for any entries that cannot fit on the basic form. Preparatory and Initial Inspections, when performed, shall be indicated on the basic CQC Report and minutes for each inspection shall be attached. Minutes shall consist of a list of specific requirements for materials, procedures or equipment to be employed and shall also include any understandings reached or items of special importance discussed.

3.9.2 In addition, outstanding deficiencies shall be listed on the form “List of Outstanding Deficiencies” at the end of this section and shall be attached to each CQC Report. As deficiencies are corrected, they are to be acknowledged on the basic CQC Report and shall be deleted from the list.

3.9.3 The form at the end of this section titled “CQC Test Report List” shall be used by the Contractor to track testing to be done as the project progresses, and to summarize the Contractor’s Quality Control testing to be reported per the CQC Plan.

3.9.4 The form “Record of Preparatory and Initial Inspections” at the end of this section shall be used by the Contractor to track Preparatory and Initial Inspections as the project progresses and also to summarize these required inspections as part of the CQC Plan.

3.9.5 Additional reporting forms pertaining to specialized activities may be included herein or elsewhere in the contract, and shall be used for reporting as indicated. If the Resident Management System (RMS) is required to be used by the Contractor for the QC System as indicated elsewhere in the contract, the Contractor will generate all reports in the RMS Version 3 or newer system and attached forms will serve as guidance only. Otherwise, forms contained herein will be used by the CQC staff for CQC System reporting.

3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the Site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. Deficiencies cited and verbal instructions given to the Contractor by the Contracting Officer shall be entered into that day’s CQC Report.

END OF SECTION

RECORD OF PREPARATORY AND INITIAL INSPECTIONS

DATE OF INSP	TYPE OF INSP	DEFINABLE FEATURE OF WORK (DESCRIBE)	REPORT NOS		PERSONS ATTENDING INSP	WAS MAT'L AND/OR EQUIPMENT PHYSICALLY INSPECTED ?
			QA	QC		
NAD FORM 826 22 JULY 86		NOTE:THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK PREP/INIT INSP'S ATTACH ADDITIONAL RESULTS OR COMMENTS AS REQUIRED				

LIST OF OUTSTANDING DEFICIENCIES

Page _____ of _____ DATE: _____

PROJECT TITLE: _____ CONTRACTOR: _____

LOCATION: _____ CQC REPORT#: _____ CONTRACT #: _____

SPEC REF OR DWG#	LOCATION ON PROJECT	DESCRIPTION OF DEFICIENCY	DATE FOUND	DATE TO BE CORRECTED	DATE CORRECTED	REMARKS

NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK OUTSTANDING CONSTRUCTION DEFICIENCIES

CQC TEST REPORT LIST

CQC REPORT# _____ Page _____ of _____

DATE: _____

CONTRACTOR: _____

CONTRACT #: _____

PROJECT TITLE: _____

LOCATION: _____

SPEC REF OR DWG#	TYPE OF TEST	DATE PERFORMED	RESULTS	REMARKS

NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK CQC TESTING. PROVIDE ATTACHMENTS AS REQUIRED.

1. Project Title: _____

Location: _____ Contract No.: _____

2. List Contractors and Subcontractors Working This Day and Areas of Responsibility of Each

3. Weather:

4. Description and Location of Work on the Project (Also indicate days of no work and reasons for delay

5. Labor and Equipment Breakdown by Trade (Attach Continuation)

6. Preparatory Phase Inspections Held (See attached minutes)

7. Initial Phase Inspections Held (See attached minutes)

8. Follow-Up Phase Inspections Performed, Results and Corrective Actions Taken

☐ a. Testing Performed. Attach Results.
 ☐ d. Outstanding Deficiencies. See Attached List.

☐ b. Verbal Instructions Received.
 ☐ e. Delivery of Equipment and Materials.

☐ c. Submittal Actions.
 ☐ f. Miscellaneous/Remarks.

(Use Space Below To Describe Checked Items)

-
- This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Signed _____ Date _____
CQC Representative

01451 - 17

SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, equipment, materials, and incidentals necessary and provide separate temporary facilities for the Contractor's use and the Government's use, as specified herein.

1.1.2 Operate and maintain temporary facilities for the duration of the project and as directed by the Contracting Officer. All cost and use charges for temporary facilities shall be included in the Contract Price.

1.1.3 The Contractor shall be responsible for protection and security of all the temporary facilities on site.

1.1.4 Project schedule is presented in SECTION 01320 – PROJECT SCHEDULE.

1.1.5 The Contractor shall perform all work in accordance with requirements in SECTION 01351 – SAFETY, HEALTH, AND EMERGENCY RESPONSE FOR CONTAMINATED SITES and the approved health and safety plan.

1.1.6 Requirements for project signs and other signage is presented in SECTION 01580 – SIGNS.

1.1.7 Requirements for site preparation are presented in SECTION 02120 – SITE PREPARATION.

1.2 SUBMITTALS

The Contractor shall submit complete packages with details for determination of compliance with this section in accordance with SECTION 01330 – SUBMITTAL PROCEDURES. Submittals shall be received by the Contracting Officer no later than the date of the Preconstruction Meeting.

1.2.1 Temporary Site Facility Layout Plan; SD-02 Shop Drawings; GA

Refer to the Contract Drawings for the general location of temporary site facilities. The Contractor shall submit a temporary site facility layout plan, as part of the Site Preparation Plan specified in SECTION 02120 – SITE PREPARATION, containing the following items, at minimum:

1.2.1.1 General layout plan showing the proposed locations for temporary facilities including offices, temporary utilities, storage containers, vehicle access and parking areas, material laydown and staging areas, temporary fencing, and other security measures.

1.2.2.2 Government's Field Office: Dimensioned floor plan, office systems, furnishings, and equipment.

1.2.2.3 Temporary Fence: Layout drawings which indicate dimensions, access to fire hydrants, gate locations and opening sizes, and other site-specific requirements.

1.3 QUALITY ASSURANCE

1.3.1 Coordinate with authorities having jurisdiction to inspect (and test if required) temporary facilities.

1.3.2 The Contractor shall provide standard equipment that are manufactured by companies whose products have commercially available replacement parts.

1.4 PERMITS

The Contractor shall be responsible for obtaining all necessary permits for temporary facilities. Contact information for utilities Contract Drawings.

1.5 REGULATIONS AND CODES

The Contractor shall comply with all applicable federal, state, city and local the laws, ordinances, codes, rules, and regulations governing the installation of temporary facilities and utilities.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Temporary Fence: The fence shall be 6-ft high with No. 9 gauge galvanized wire woven in 2-in diamond mesh with top and bottom twisted selvage. Intermediate and terminal posts shall be galvanized steel H or pipe, minimum 2-3/8-in OD line posts, 2-7/8-in OD corner and pull posts, and 1-5/8-in OD top rails.

2.1.2 Project Sign: Plywood shall be A-A EXT-APA grade, 1-in thick. Posts and braces shall be pressure treated lumber.

2.1.3 Geotextile: The geotextile installed underneath the temporary facilities shall be in accordance with SECTION 02273 – GEOTEXTILE FABRIC.

2.1.4 Fill: The fill applied below the temporary facilities shall be in accordance with SECTION 02230 – EARTHWORK AND GRADING.

2.1.5 Crushed Stone: The crushed stone added below the temporary facilities shall be in accordance with SECTION 02230 – EARTHWORK AND GRADING.

2.2 EQUIPMENT

2.2.1 Fire Extinguishers: Provide portable, UL-rated with class and extinguishing agent required by locations and classes of fire exposure. Provide at least one for each trailer/office.

2.2.2 Temporary Heat: Provide vented, self-contained, liquid propane gas or fuel oil heaters with individual space thermostatic control. Equipment shall be listed and labeled for type of fuel consumed and marked for intended use.

2.3 GOVERNMENT'S FIELD OFFICE

2.3.1 General:

- Provide minimum 8-ft by 28-ft office trailer for the Government's exclusive use for the duration of the project. Field office trailer shall have at least one office, one restroom, and two exterior doors.
- The restroom shall include toilet, sink and faucet, and exhaust fan.
- The Government's field office shall be weather-tight construction with floor, walls, and ceiling completely insulated. Each room shall have at least one operating window. Each window shall have a venetian blind and full insect screen. Furnish two sets of keys for each exterior door. Provide fully insulated skirting on all sides of the field office trailer. Provide steps, platforms, handrails, and boot scrapers for each exterior door.

2.3.2 Furnishings

The Contractor shall provide the following furnishings for the Government's temporary field office for the duration of the project. All furnishings shall be new or in very good condition which shall be subject to approval of the Contracting Officer.

- Two 60-in by 30-in desks with lockable file drawer
- One 72-in by 30-in folding table
- Six folding chairs
- Two file cabinets, 2 drawer, legal size, Hon 310 Series, or equal
- Two wastebaskets
- One wall-mounted first aid kit, OSHA (1910.151.b) and ANSI (Z308.1-2003) compliant, suitable for ten people

2.3.3 Equipment

The Contractor shall provide the following equipment for the Engineer's temporary field office for the duration of the project. All equipment shall be new.

- Two 8-outlet surge protectors with six-foot cord and minimum 1800-joule energy rating or greater.

2.3.4 Services

The Contractor shall provide the following services for the duration of the project. Services shall include all costs for installation, use, maintenance, and removal of all products, services and equipment billed by each provider for each service specified herein. Field office shall have complete and fully functional electrical, plumbing, and HVAC systems. Provide at least two smoke detectors hard-wired into the electrical system. Perform all scheduled and unscheduled maintenance for all systems and as directed by the Contracting Officer.

- Electrical System: Provide connection to temporary electric service. Comply with the electrical requirements of the furnished office trailer. Provide main circuit panel, sufficient GFCI outlets and lighting in each room, exterior lights at each exterior door, and proper grounding of entire electrical system.

- Plumbing system: Provide potable water to the existing sanitary system or restroom. Contractor shall provide bottle water service with water chiller/dispenser.
- HVAC System: Provide central heating and air conditioning system with programmable thermostat. System shall be capable of maintaining an interior temperature of 70°F when the exterior temperature is 0°F and an interior temperature of 75°F when the exterior temperature is 100°F.
- Sanitary service: Provide regular pumping of waste holding tank, if applicable, as needed.

2.3.5 Supplies:

- Provide the following supplies for the duration of the project: toilet paper, paper towels, soap, light bulbs, and other consumables as required by the Contracting Officer.

PART 3 EXECUTION

3.1 PREPARATION

- 3.1.1 Prior to set up of temporary facilities at the site, the Contractor shall finalize the location of the temporary facilities with the Contracting Officer.
- 3.1.2 In the area where temporary facilities will be located, excavation and filling will be conducted in a manner to fill voids and depressions to facilitate the installation of a geofabric layer. The area will be graded to ensure a level surface. Excavation and grading will be conducted in accordance with SECTION 02230 – EARTHWORK AND GRADING.
- 3.1.3 Following grading, the Contractor shall furnish and install a woven geofabric layer over which minimum of 6-inch thick layer of crushed stone shall be applied.

3.2 GOVERNMENT'S FIELD OFFICE

3.2.1 Government's trailer shall be set up and ready for occupancy within 30 days of the Notice to Proceed and prior to commencement of Work at the site. All systems, furnishings, equipment, and services specified herein shall be furnished, installed, and completely operational for the field office to be considered established.

- Provide regular office cleaning services for the duration of the project.
- Provide supplies including, but not limited to restroom supplies (toilet tissue paper, paper towel, and soap), as well as light bulbs, air conditioner filters, etc.
- Supply all fuel for heating and pay all utility bills.

3.2.2 Install field office plumb and level.

3.2.3 Government's trailer shall be removed and the site shall be cleaned up and restored before Final Completion of the project.

3.3 CONTRACTOR'S FIELD OFFICE

3.3.1 Provide a temporary field office for the Contractor's use for the duration of the project. An authorized representative of the Contractor shall be present at all times while the Work is in progress. Instructions received at the Contractor's field office from the Contracting Officer shall be considered delivered to the Contractor.

3.3.2 Locate field office in accordance with Contract Drawings and as directed by the Contracting Officer.

3.3.3 Establish and occupy field office within 30 days of the Notice to Proceed, unless otherwise approved by the Contracting Officer.

3.4 TEMPORARY POWER

Contractor shall furnish temporary power with sufficient capacity to meet the project needs. Make all necessary arrangements with the local electric company for temporary electric service and pay all expenses in connection therewith.

3.5 TEMPORARY HEAT

3.5.1 Provide heat as may be necessary to maintain proper comfortable working environment in the trailers.

3.6 SANITARY FACILITIES

3.6.1 Provide self-contained, single occupant toilet unit of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed in a fiberglass or other approved non-absorbent shell at each project site and during the performance of the work. Contractor shall maintain these facilities in accordance with State's Rules and Regulations.

3.7 VEHICLE ACCESS AND PARKING

3.7.1 Provide parking areas, traffic control devices and staging areas as approved by the Contracting Officer.

3.7.2 Temporary staging area shall be installed as shown on the Contract Drawings.

3.8 WASTE MANAGEMENT

3.8.1 Provide covered dumpster, minimum 4-cubic yards, dedicated for field office waste. Empty dumpsters on a regular basis. Dumpsters shall not exceed their capacities at any time.

3.9 PROJECT SIGNS

3.9.1 Furnish and install project signs as indicated in Section 01580 - SIGNS. Signs shall be placed at project site as directed by the Contracting Officer and shall remain maintained in good condition for the life of the construction period.

3.9.2 Remove each sign at final acceptance, unless otherwise directed by the Contracting Officer.

3.10 REMOVAL AND RESTORATION

3.10.1 Remove each temporary facility complete when need for its service has ended and as approved by the Contracting Officer. Coordinate removal of temporary facilities with authorities having jurisdiction.

3.10.2 Restore all improvements damaged by the installation, operation, and removal of the temporary facilities. Obtain prior approval from Contracting Officer for restoration work.

3.10.3 To provide temporary vehicle/fuel for Government representative usage for Quality Assurance site inspection during the duration of the project.

END OF SECTION

SECTION 01540

SECURITY

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish all labor, materials, equipment and incidentals necessary to provide security for the duration of the project. Work shall be performed as specified herein and in the approved Contractor's Security Plan.

1.2 SUBMITTALS

Approval from the Government is required for submittals with an "GA" designation; submittals having an "FIO" designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.2.1 Security Plan; SD-01 Pre-Construction Submittal; GA

Prior to the commencement of construction operations, the Contractor shall submit for approval a Security Plan, detailing the proposed security program for the site.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

3.1.1 The Contractor shall be responsible for maintaining site security and furnishing all labor, materials, equipment and incidentals to provide security for the project site, 24 hours a day, seven days a week, including holidays, throughout the duration of the contract.

3.1.2 The Contractor shall establish a security program prior to any field construction activities.

3.1.3 The Contractor shall be both responsible and liable for site security.

3.1.4 Maintain/erect warning and security signs around the site perimeter.

3.1.5 The Contractor shall provide control of all persons and vehicles entering and leaving the site.

3.1.6 The Contractor shall provide security identification specific to the site, for all onsite personnel and Contractor personnel authorized to enter the site.

3.2 SECURITY PROGRAM

3.2.1 Security Program Objectives

The principal objectives of the Security Program are:

3.2.1.1 Deter, restrict, and/or control financial losses to the Government and the Contractor. This includes prevention or detection of theft, vandalism, sabotage, and arson.

3.2.1.2 To keep unauthorized people from entering the site and receiving any injuries.

3.2.1.3 To keep unauthorized people from entering the site and removing equipment or hazardous substances.

3.2.1.4 To keep unauthorized people from taking action on the site that might exacerbate the environmental problem or interfere with its remediation.

3.3 SECURITY PERSONNEL

Conditions of employment for all site Security Officers shall include the following:

3.3.1 Detailed pre-employment history establishing moral character and dependability.

3.3.2 Applicant shall submit to a current physical examination conducted by the Contractor's designated physician. This physical shall include drug testing, and a list of all medicines applicant is currently taking or has taken during the last year. Physical shall also include vital statistics and tests to ensure the capability of the applicant to function on site without health restrictions.

3.3.3 Investigation that clears applicant of felony convictions.

3.3.4 Failure to maintain attentive and alert status in performance of duties, which includes sleeping while on duty, intoxication on the job, and bringing unauthorized personnel on site, is completely unacceptable and shall be grounds for not employing or for terminating employment.

3.3.5 In general, site Security Officers shall be physically fit, literate in the English and Spanish language, experienced, stable, reliable, and possess the physical and psychological skills that are necessary to control unauthorized persons on the site.

3.3.6 If the Security Officer carries a weapon consisting of side arms and/or shotgun or rifle, weapon(s) shall be catalogued, including type, model, caliber, and serial number and inspected by the security firm. The Security Officer shall have proficiency training and maintain proficiency rating with the particular type of weapon carried, as required by Commonwealth of Puerto Rico law.

3.4 SITE SECURITY REQUIREMENTS

3.4.1 A site Security Officer shall be on the site during non-working hours on weekdays and 24 hours per day during holidays, weekends, and days when no activities are in progress for the entire duration of the construction activities. A Security Officer shall patrol the Support, Contamination Reduction, and Exclusion Zones. The Contractor shall be responsible for establishing security during working hours on workdays. Working hours are defined in SECTION 01310 – JOBSITE ADMINISTRATION.

3.4.2 A Security Center Office shall be established in the Support Zone. A small, temporary trailer or office building shall be equipped with a telephone, two-way radios, lights, and a desk. The office shall be established for the purposes of record-keeping and administering security.

3.4.3 The Contractor shall maintain a log of all security incidents. This log shall be furnished to the Government upon request.

3.4.4 The Government will have the right of approval and rejection of any and all security-assigned personnel of the Contractor for the duration of the contract. If approved by the Government, the Contractor may designate a member of its staff as Site Security Officer during normal working hours. The Government may revoke this approval without cause or justification, at which time the Contractor shall immediately provide independent site security.

3.4.5 Gates in all fences shall remain closed, except when in use by authorized personnel.

3.4.6 Security Officers shall be responsible for touring the perimeter of the site on an hourly basis when there is no construction activity being performed for the entire contract duration. The exact timing of the hourly tours shall be varied as to not allow a definable routine to develop. There shall be a log of the tours, with observed conditions recorded, maintained at the Security Center Office.

3.4.7 Security Officers shall be responsible for controlling conditions to ensure against any unauthorized entry. Should persons attempt unauthorized entry, the Security Officer shall be responsible for warning the individuals. If unauthorized persons ignore the warnings, the Security Officer shall notify appropriate law enforcement personnel to remove the persons.

3.4.8 The Government will maintain a list of personnel approved to be present on the job site. A copy of the list will be provided to the Contractor. Only authorized personnel may make changes to the job site list.

3.4.9 A copy of the emergency checklist, providing all emergency numbers for hospitals, ambulance service, law enforcement, paramedics, and fire departments, shall be posted in all onsite offices and at the designated project information board.

3.4.10 Temporary lighting shall be provided to ensure effective surveillance at night at active construction areas.

3.5 PERSONNEL IDENTIFICATION

3.5.1 The Contractor shall provide security identification specific to the site for all on-site personnel and Contractor personnel entering the Site, showing:

3.5.1.1 Name of individual

3.5.1.2 Occupation

3.5.1.3 Name of employer

3.5.2 The Contractor shall be responsible for and guarantee that security identification is worn by each individual and visible at all times while the individual is on site. Badge assignments shall be based on criteria included in the Contractor's Site Safety and Health Plan (SSHP) or as established by the Government.

3.5.3 Improperly identified personnel shall be excluded from the site.

3.6 ENTRANCE CONTROL

The Contractor shall provide control of all persons, equipment, and vehicles entering and leaving the site as follows:

3.6.1 Require each person to display proper identification.

3.6.2 Require all personnel and visitors having access to the site to sign in and sign out, and maintain a log of all site access.

3.6.3 Vehicular access within the Site shall be restricted to authorized vehicles only. Use of site-designated parking areas shall be restricted to vehicles of the Government personnel, Contractor, subcontractors, on-duty service personnel assigned to the site and visitors approved by the Government.

3.6.4 The Contractor shall accommodate and coordinate visits with local law enforcement agencies, including police, sheriff, highway patrol, emergency medical care units, fire department, and utility emergency teams.

3.6.5 Site visitors shall not be permitted to enter active work areas unless approved by the Government.

3.6.6 The Contractor shall maintain a list of persons authorized for site entry and submit a copy of the list to the Government on request.

3.7 BONDING AND UNIFORM REQUIREMENTS

3.7.1 The security firm shall be bonded.

3.7.2 Each Site Security Officer shall wear a uniform that displays the name of the security firm. These uniforms are to be complete, including hat, shirt, trousers, belt, and boots. Uniforms shall be pressed and boots shined. Each officer shall present a neat, professional appearance.

3.7.3 During patrols, security personnel shall be in proper safety attire, including steel-toe boots and additional PPE as required by site conditions/activities.

3.8 VISITOR CONTROL

3.8.1 All visitors must be approved by the Government.

3.8.2 All visitors shall be required to read and sign an approved synopsis of the SSHP prior to entering the Site.

3.8.3 Visitors shall be escorted at all times, except Government employees and representatives.

3.9 TRAFFIC CONTROL

3.9.1 The Contractor shall be responsible for controlling vehicular traffic on and through the site in order to ensure safe and efficient operations.

3.9.2 Parking areas shall be regulated to ensure free entry and egress to and from the site.

3.10 NON-PERMITTED PROCEDURES

3.10.1 The site Security Officer shall remain on the site until the next shift replacement arrives. The site shall not be left unsecured.

3.10.2 Security personnel shall, in general, monitor, authorize entry to, and inspect all areas of the project on a continuing basis and shall not serve any production work effort of the project.

3.10.3 In scheduling the site security personnel, the same employee shall not be scheduled for consecutive shifts.

END OF SECTION

SECTION 01550

SURVEYING

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, materials, equipment and incidentals required to provide surveying services prior to remedial activities, after remedial activities, and as measurement during remediation activities.

1.1.2 The Contractor shall verify the existing conditions, contours, and locations of structures within the construction limits defined on the Contract Drawings.

1.1.3 The Contractor shall verify the exact position or location of all work control points which will be provided by the Contracting Officer during the Pre-Construction Conference. All work shall be referenced to and established from the control points, re-established where necessary and maintained throughout the life of the contract. Any error or apparent discrepancies found on the Contract Drawings or specifications shall be called to the Contracting Officer's attention for interpretation prior to proceeding with the work.

1.1.4 The Contractor shall prepare a pre-construction survey prior to site preparation activities and shall prepare As-Built Drawings detailing the actual conditions of subgrades and final restored grades including site restoration upon the completion of work.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of these standards, the revision in effect at the time of contract award shall apply.

UNITED STATES FEDERAL GEODETIC CONTROL COMMITTEE (FGCC)

FGCC Standards and Specifications for Geodetic Control Networks

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 – SUBMITTAL PROCEDURES:

1.3.1 Pre-Remedial Action Survey, SD-01 Pre-construction Submittals; FIO

The Contractor shall submit a pre-remedial action topographic and utility survey to the Contracting Officer prior to site preparation activities. The topographic survey may be performed simultaneously with clearing activities.

1.3.2 Surveyor Qualifications; SD-03 Product Data; FIO

The Contractor shall submit the name, address, New Jersey Land Surveyor registration number, and telephone number of the surveyor to the Contracting Officer before starting survey work.

1.3.3 Survey Accuracy Documentation; SD-03 Product Data; FIO

1.3.3.1 On request, documentation verifying accuracy of survey work shall be submitted to the Contracting Officer by the Contractor.

1.3.3.2 Certificates signed by the surveyor stating that elevations and locations of site construction features are in conformance, or nonconformance, with Contract Documents shall be submitted to the Contracting Officer at the completion of work requiring services of the surveyor.

1.3.4 Surveyor Field Notes; SD-03 Product Data; FIO

Copies of the surveyor's field notes, calculations, and graphical layouts shall be submitted to the Contracting Officer as requested.

1.3.5 Compliance Surveys; SD-11 Closeout Submittals; FIO

Submit compliance surveys of all grading, soil cover installation, and restoration operations.

1.3.6 As-Built Drawings; SD-11 Closeout Submittals; GA

The Contractor shall submit one (1) electronic copy and two (2) paper copies to the Contracting Officer. The submittal shall include the Contractor's standard title block with the surveyor's subtitle block, signature and Land Surveyor's seal. The drawing size shall be 34 inches by 44 inches. The paper copies shall be exact duplicates of the electronic files. All survey data shall be compiled and digitized for use with AutoCAD 2016 or the latest version, as approved by the Contracting Officer. This map shall be an update of the interim site survey map after site restoration.

1.4 QUALITY CONTROL

1.4.1 The Contractor shall be responsible for all of the surveying done at the Site. The surveyor shall be a qualified Registered Land Surveyor in the State of New Jersey. The Contractor's surveyor shall also have a minimum of two years of experience in construction surveying, and layout and maintenance of as-built construction drawings, with a record of performing horizontal and vertical control requirements as stated in this section.

1.4.2 The surveyor shall check all equipment including, but not limited to, electronic survey instruments, compasses, transits, and levels for accuracy and maintain records of such checks. Equipment and instrumentation will be calibrated and maintained in accordance with the manufacturer's guidelines. The Contractor shall make records of the checks and calibrations available to the Contractor upon request.

1.4.3 All survey work will be according to third-order accuracy standards as specified by the Federal

Geodetic Control Committee in the “Standards and Specifications for Geodetic Control Networks”, published September 1984. The units of measure shall be U.S. Survey Feet.

1.4.4 The Contractor shall notify the Contracting Officer of issues that may affect quality or performance of work within 24 hours of their occurrence.

1.5 PROJECT RECORD DOCUMENTS

1.4.1 A complete, accurate log of control and survey work as it progresses shall be maintained at the work site by the Contractor.

1.4.2 Upon completion of the work, all record documents must be submitted to the Contracting Officer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 INSPECTION

The Contractor shall verify locations of site reference and survey control points prior to starting work. The Contracting Officer must be promptly notified of any discrepancies discovered.

3.2 SURVEY REFERENCE POINTS

3.2.1 The Contracting Officer will provide the Contractor with all site reference points during the Pre-Construction Conference.

3.2.2 The Contractor shall take all reasonable measures to protect site reference points prior to starting site work. Reference points shall not be relocated without prior written approval of the Contracting Officer.

3.2.3 The Contracting Officer will be immediately notified of loss, damage, or destruction of any reference point, or any relocation required because of changes in grade or other reasons.

3.2.4 Temporary monuments shall be set as necessary to perform the surveying. They may be wood, metal or marks scribed on permanent site features. All monuments shall be described in the field notes and marked on site maps for future reference.

3.2.5 X, Y, and Z coordinates of benchmarks and survey control points shall be determined and recorded with a maximum permissible error of 0.10 feet in any coordinate direction.

3.3 SURVEY REQUIREMENTS

3.3.1 The Contractor shall establish the exact position or location of all work control points. All work shall be referenced to and established from the control points, re-established where necessary and maintained throughout the life of the contract. Any error or apparent discrepancies found in the

Contract Documents shall be called to the Contracting Officer's attention for interpretation prior to proceeding with the work.

3.3.1.1 All horizontal coordinates shall be referenced to North American Datum of 1983 (NAD83) New Jersey State Plane Coordinate System, Zone 2900, U.S. Survey Foot. The elevation shall be referenced to the North American Vertical Datum of 1988 (NAVD88), U.S. Survey Foot.

3.3.1.2 The survey shall be sufficient to generate digital topographic mapping on 1-foot contour intervals.

3.3.1.3 The topographic map accuracy shall meet the U.S. National Map Accuracy Standards.

3.3.2 The Contractor shall verify the existing conditions, contours and locations of structures within the clearing limits defined on the Contract Drawings.

3.3.3 The Contractor shall establish lines and levels for, and locate and layout by instrumentation and similar appropriate means, all site features to be constructed or executed. These include, but are not limited to, the following:

- Staging area and support zone layout
- Site clearing and restoration limits
- Decontamination facility
- Access roads
- Fence lines
- Soil cover limits and limits of geotextile
- Subgrading
- Final site grading
- Other site restoration features

3.3.4 The Contractor shall re-verify layouts periodically during construction by the same means.

3.3.5 The Contractor shall prepare As-Built Drawings that identify the features listed in Paragraph 3.3.3 above. All areas disturbed and restored shall be clearly identified.

END OF SECTION

SECTION 01580

SIGNS

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 Furnish all labor, equipment, materials and incidentals required to provide and erect a U.S. Environmental Protection Agency (EPA)/U.S. Army Corps of Engineers (USACE) project site sign, safety signs and a bulletin board.

1.1.2 The Contractor shall provide and erect an EPA/USACE project site sign and safety signs meeting the requirements of this section at a location to be determined by the Contracting Officer. The sign requirements are shown at the end of this section. Wording to be included on each sign shall be provided by the Contracting Officer after contract award.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1903 Inspections, Citations, and Proposed Penalties

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Materials shall conform to the requirements as shown on the drawings at the end of this section and shall be suitable for use in an unprotected exterior environment.

2.1.2 The Contractor may modify and reuse existing signs from previous project phases. Dollar amounts and wording changes shall be provided by the Contracting Officer after award.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall place signs on the work area fence that bear the legend, in letters at least four inches high:

WARNING
HAZARDOUS WORK AREA
DO NOT ENTER UNLESS AUTHORIZED

The Contractor shall post hazard warning banners at areas of special hazard including, but not limited to, the perimeter of the Exclusion Zone. Letters shall be at least four inches high.

3.2 INSTALLATION REQUIREMENTS

The EPA/USACE project site sign and the safety signs are to be mounted on 4-inch by 4-inch by 8-foot treated timbers and set firmly into the ground above prevailing grade to permit public viewing, and shall be installed during site mobilization.

3.3 BULLETIN BOARD

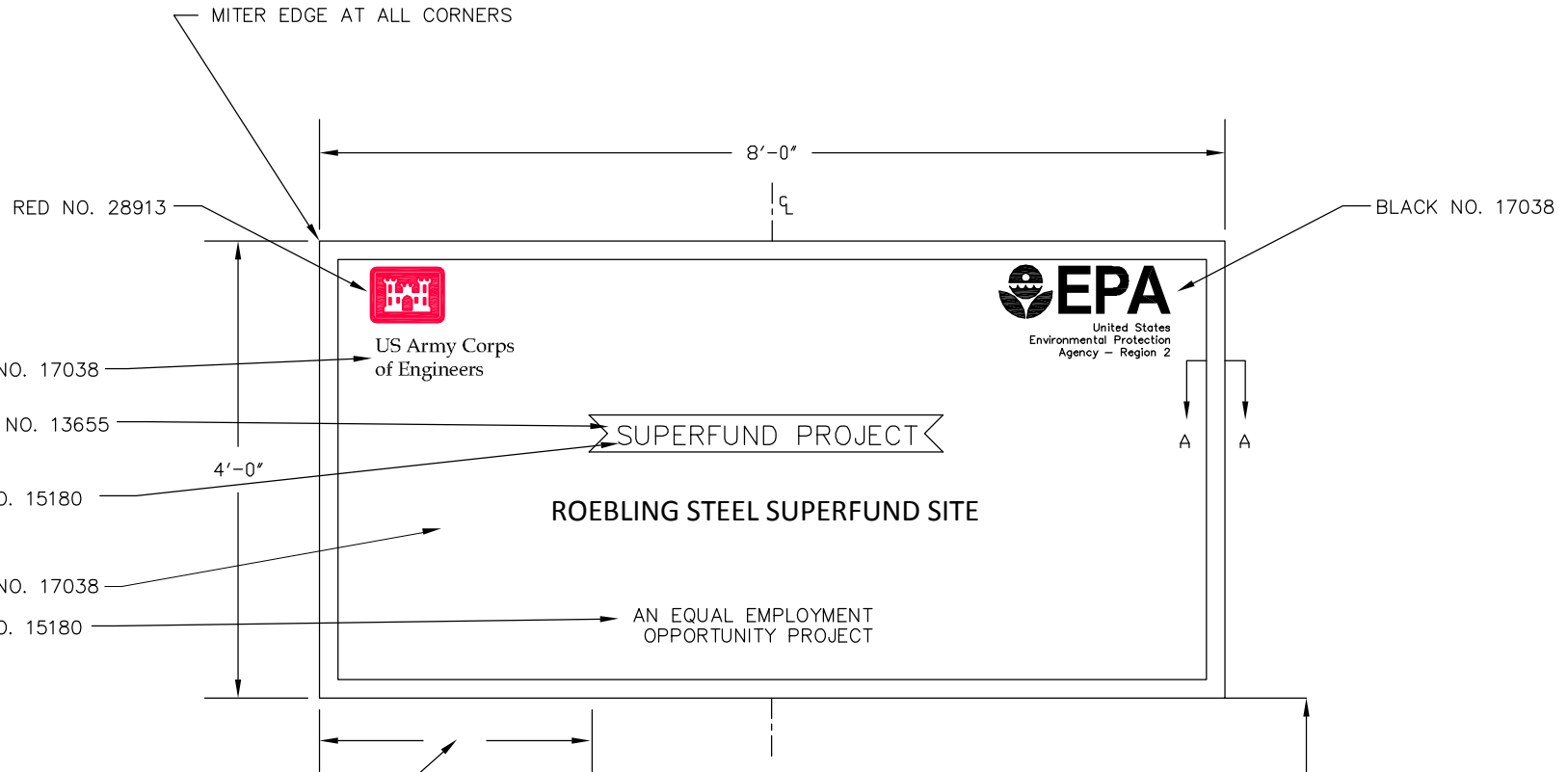
Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36-inches by 48-inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, the Wage Rate Information poster and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned information shall be displayed until work is completed. Upon completion of work, the bulletin board shall be removed by and remain the property of the Contractor.

The Contractor shall post and maintain a notice or notices, to be furnished by the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, informing employees of the protections and obligations provided for in the Occupational Safety and Health Act as per OSHA 29 Code of Federal Regulations 1903.2(a)(1). The Contractor shall post such notice or notices in a conspicuous place or places where notices to employees are customarily posted. The Contractor shall take steps to ensure that such notices are not altered, defaced, or covered by other material.

3.4 CLOSURE REQUIREMENTS

The EPA/USACE project site sign, bulletin board and the safety signs are to be removed from the Site after contract completion.

END OF SECTION

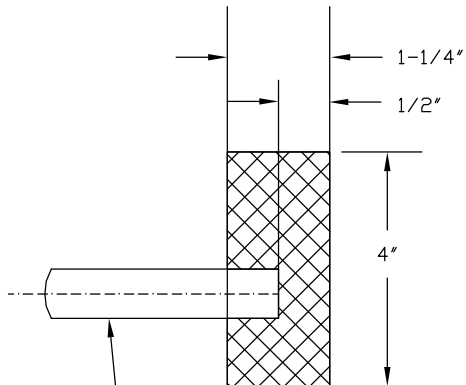


LEFT BORDER SHALL BE DETERMINED USING THE LONGEST
LINE CENTERED ON THE SIGN PROVIDING EQUAL BORDERS

PROVIDE ADEQUATE SUPPORTS FOR SIGN AS SITE CONDITIONS
MAY REQUIRE AND KEEP SIGN A PROPER DISTANCE ABOVE
PREVAILING GRADE TO PERMIT PUBLIC VIEWING.



COLOR NUMBERS REFER TO FEDERAL COLOR STANDARDS NO . 595a (1-68), WHICH ARE AVAILABLE FROM GSA SUPPLIES.



EXTERIOR TYPE HIGH DENSITY OVERLAID PLYWOOD
OR APPROVED MATERIAL SUITABLE FOR SIGNS

SECTION "A-A"

BACKGROUND AND ALL OTHER
SIGN COMPONENTS NOT DESIGNATED
ARE PAINTED WHITE NO. 17886.

Each contractor's safety record is to be posted on Corps managed or supervised construction projects and mounted with the Construction Project Identification sign specified on page 16-2.

The graphic format, color, size and typefaces used on the sign are to be reproduced exactly as specified below. The

title with First Aid logo in the top section of the sign, and the performance record captions are standard for all signs of this type. Legend groups 2 and 3 below identify the project and the contractor and are to be placed on the sign as shown.

Safety record numbers are mounted on individual metal plates and are screw-

mounted to the background to allow for daily revisions to posted safety performance record.

Special applications or situations not covered in these guidelines should be referred to the district Sign Program Manager.

Legend Group 1: Standard two-line title "Safety is a Job Requirement" with 8" (outside diameter) Safety Green first aid logo.
Color: To match Pantone system 347
Typeface: 3" Helvetica Bold
Color: Black

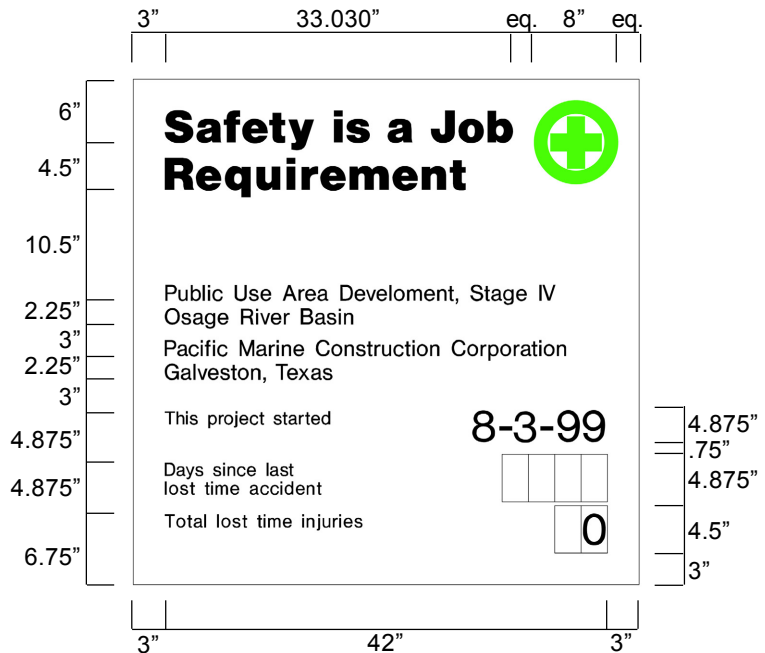
Legend Group 2: One- to two-line project title legend describes the work being done under this contract and name of host project.
Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

Legend Group 3: One- to two-line identification: name of prime contractor and city, state address. Color: Black
Typeface: 1.5" Helvetica Regular
Maximum line length: 42"

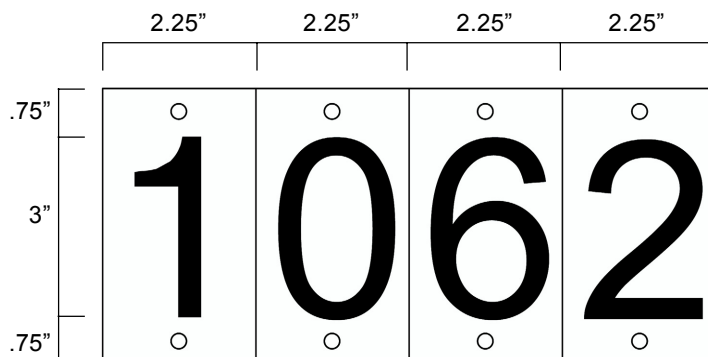
Legend Group 4: Standard safety record captions as shown.
Color: Black
Typeface: 1.25" Helvetica Regular

Replaceable numbers are to be mounted on white .060 aluminum plates and screw-mounted to background.
Color: Black
Typeface: 3" Helvetica Regular
Plate size: 2.5" x 4.5"

All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D.



Sign Type	Legend Size (A)	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-02	various	4'x4'	4"x4"	HDO-3	48"	WH/BK-SG



All Construction Project Identification signs and Safety Performance signs are to be fabricated and installed as described below. The signs are to be erected at a location designated by the contracting officer representative and shall conform to the size, format, and typographic standards shown on pages 16-2 and 16-3. Detailed specifications

for HDO plywood panel preparation are provided in Appendix B.

Shown below the mounting diagram is a panel layout grid with spaces provided for project information. Photocopy this page and use as a worksheet when preparing sign legend orders.

For additional information on the proper method to prepare sign panel graphics, contact the district Sign Program Manager.

The sign panels are to be fabricated from .75" High Density Overlay Plywood. Panel preparation to follow HDO specifications provided in Appendix B.

Sign graphics to be prepared on a white nonreflective vinyl film with positionable adhesive backing.

All graphics except for the Communication Red background with Corps Signature on the project sign are to be die-cut or computer-cut nonreflective vinyl, prespaced legends prepared in the sizes and typefaces specified and applied to the background panel following the graphic formats shown on pages 16-2 and 16-3.

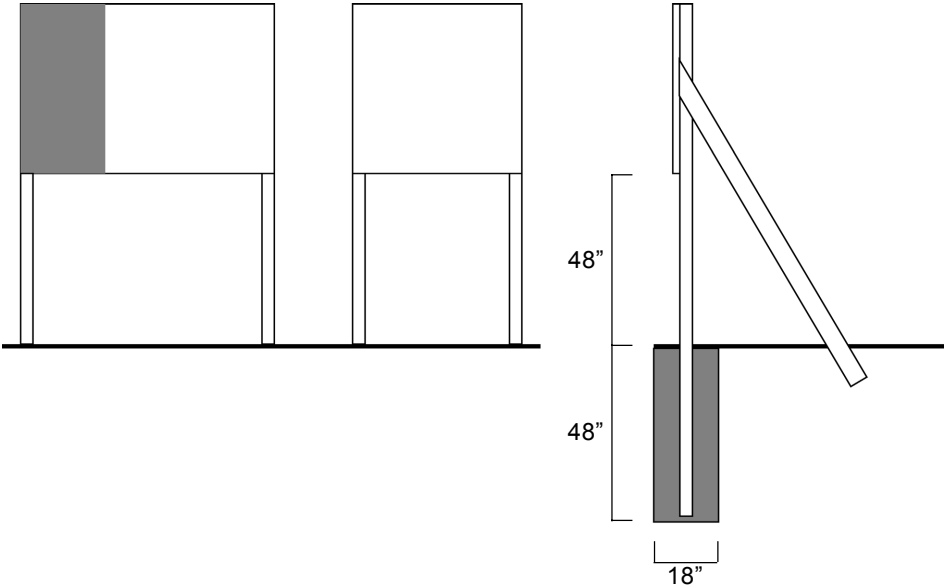
The 2'x 4' Communication Red panel (to match Pantone system 032) with full Corps Signature (reverse version) is to be screen-printed on the white background. Identification of the district or division may be applied under the signature with white cut vinyl letters prepared to Corps standards.

Drill and insert six (6) .375" T-nuts from the front face of the HDO sign panel. Position holes as shown. Flange of T-nut to be flush with sign face.

Apply graphic panel to prepared HDO plywood panel following manufacturers' instructions.

Sign uprights to be structural grade 4" x 4" treated Douglas Fir or Southern Yellow Pine, No.1 or better. Post to be 12' long. Drill six (6) .375" mounting holes in uprights to align with T-nuts in sign panel. Countersink (.5") back of hole to accept socket head cap screw (4" x .375").

Assemble sign panel and uprights. Imbed assembled sign panel and uprights in 4' hole. Local soil conditions and/or wind loading may require bolting additional 2" x 4" struts on inside face of uprights to reinforce installation as shown.



Construction Project Identification Sign
Legend Group 1: Corps Relationship

1. _____
2. _____

Legend Group 2: Division/District Name

1. _____
2. _____

Legend Group 2a: Military/Civil Works Sponsor

1. _____
2. _____

Legend Group 3: Project Title

1. _____
2. _____
3. _____

Legend Group 4: Facility Name

1. _____
2. _____

Legend Group 5: Contractor/A&E

1. _____
2. _____
3. _____
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5. _____

Legend Group 5b: Contractor/A&E

1. _____
2. _____
3. _____
4. _____
5. _____

Safety Performance Sign

Legend Group 2: Project Title

1. _____
2. _____

Legend Group 3: Contractor/A&E

1. _____
2. _____

SECTION 01670

GREEN REMEDIATION REQUIREMENTS

PART 1 GENERAL

1.1 SCOPE OF WORK

The Contractor shall incorporate green remediation practices during construction activities whenever feasible in accordance with the EPA Region 2 “Clean & Green” Policy, issued on March 17, 2009, updated March 11, 2010. This section covers the requirements for performing green remediation practices at the Site, including furnishing all labor, materials, equipment and incidentals required to complete the work described herein.

1.2 SUBMITTALS

The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.2.1 Renewable Energy Program; SD-03 Product Data; GA

The Contractor shall submit details regarding the renewable energy program that will be used to purchase renewable energy through the local energy supplier for all site activities, including name of the renewable energy supplier; type and percentage of renewable energy to be used (solar, wind, etc.); and method of supply (direct or Renewable Energy Certificates [RECs]).

1.2.2 Fuel; SD-03 Product Data; GA

The Contractor shall submit details regarding the fuel providers and types of fuel, including sulfur content, to be purchased during the construction activities.

1.2.3 Paper Product Literature; SD-03 Product Data; GA

The Contractor shall submit product literature for all copy papers, file folders, and other paper office supplies indicating that the supplies meet the minimum requirements for recycled content as specified herein.

1.2.4 Green Remediation Documentation; SD-07 Certificates; FIO

The Contractor shall submit documentation to support the green remediation activities implemented, including, but not limited to:

- a) Receipts for energy purchased
- b) Receipts for fuel purchased
- c) Disposal certificates for waste sent to recycling
- d) Receipts for paper products purchased

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 RENEWABLE ENERGY

3.1.1. The Contractor shall purchase 100 percent renewable energy through the local utility provider, Public Service Electric and Gas Company (PSE&G), for all electricity used during the remedial construction.

3.1.2. The Contractor shall submit receipts to document that 100 percent renewable energy was used for all electricity consumed during the remedial construction.

3.2 FUEL

3.2.1 Only ultra-low sulfur diesel (ULSD) fuel shall be used during the remedial construction. The Contractor and its subcontractors shall supply receipts for purchase of all fuel to document that only ULSD fuel was consumed.

3.2.2 Vehicle idling shall not be allowed for longer than 5 minutes during remedial construction, including, but not limited to, earth moving equipment.

3.2.3 Local labor shall be used when possible to reduce fuel consumption associated with driving to the site. Locally supplied materials shall be used when possible.

3.2.4 The number of field mobilizations shall be minimized when possible to reduce fuel consumption.

3.2.5 Sequencing and scheduling shall be performed in such a manner to minimize transportation and/or shipping fuel consumption whenever possible. This shall include consideration for sample shipments, transportation of waste material for off-site disposal, import of clean material, and on-site handling of materials during removal and restoration activities.

3.3 MATERIAL REUSE, REDUCTION, AND RECYCLING

3.3.1 Soil excavated during subgrading shall be used as fill in other portions of the site in accordance with SECTION 02230 – EARTHWORK AND GRADING.

3.3.2 Waste and debris encountered during site activities shall be recycled as much as possible. For example, the portion of the existing chain link fence that will be removed as part of site preparation activities shall be recycled.

3.3.3 One hundred percent of the copy papers, file folders, and other paper office supplies shall come from recycled sources. Required recovered materials content ranges shall be as recommended by EPA's Comprehensive Procurement Guidelines (CPGs) at <http://www.epa.gov/epawaste/conservation/tools/cpg/index.htm>. The Contractor shall submit receipts which indicate that the purchased products contain the required recycled content.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, materials, equipment and incidentals required to maintain accurate and comprehensive records of all site activities.

1.1.2 The Contractor shall maintain accurate and comprehensive records of all site activities as well as all additions, substitutions of materials, variations in work, and any other revisions to the Contract Documents.

1.1.3 The Contractor shall maintain at the site for the Government one record copy of:

1.1.3.1 Records drawings showing progress of work.

1.1.3.2 Technical specifications.

1.1.3.3 Addenda.

1.1.3.4 Modifications to the contract.

1.1.3.5 Government's directives.

1.1.3.6 Written reports of any significant quality assurance problems.

1.1.3.7 Progress meeting minutes.

1.1.3.8 Final as-built drawings.

1.1.3.9 Daily work activity summary reports, including:

1.1.3.9.1 DVD/USB videos and photographs.

1.1.3.9.2 Reports on any emergency response actions.

1.1.3.9.3 Reports and tracking sheets on all daily site activities.

1.1.3.9.4 Chain-of-custody documents.

1.1.3.9.5 Construction schedule and progress chart of work.

1.1.3.9.6 Change orders and other modifications to the contract.

1.1.3.9.7 All tracking sheets of onsite analytical results and offsite laboratory analytical results.

1.1.3.9.8 Meteorological records.

1.1.3.9.9 Air monitoring data

1.1.3.9.10 All safety and accident reports.

1.1.3.9.11 All spill incident reports.

1.1.3.9.12 Daily construction quality control reports.

1.1.3.9.13 Truck load tickets of common material, loam, and gravel.

1.1.3.9.14 Records of quantity of waste material disposed offsite or recycled.

1.1.3.9.15 All waste disposal manifests.

1.1.3.9.16 Other items as required by the Government.

1.1.4 Where appropriate, one copy of all project record documents shall be maintained on compact disk compatible with the Government's software.

1.2 MAINTENANCE OF DOCUMENTS

1.2.1 The Contractor shall store record documents and samples in the Contractor's Field Office apart from documents used for construction work.

1.2.2 The Contractor shall provide files and racks for the storage of documents; storage space that can be secured and locked; and a storage area that is clean and dry. Documents and samples should be filed to facilitate retrieval.

1.2.3 Make documents available at all times for inspection by the Government.

1.2.4 The Contractor shall keep up-to-date a complete record set of red-line drawings, which shall be corrected daily to show every change, and the approved shop drawings. This set shall be legibly marked.

1.2.5 The Contractor shall keep up-to-date a complete set of specifications and addenda to record changes made by directive or by change order. This set shall be legibly marked.

1.2.6 The sets of marked drawings and specifications shall be submitted to the Government at the completion of construction.

1.2.7 The Contractor shall be responsible for final handling and storage of project record documents, including boxing, labeling, and shipping to the final destination as determined by EPA. If

approved by the Government, the Contractor may instead scan project record documents for electronic storage to eliminate physical storage costs.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01780

PROJECT CLOSEOUT

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 This specification outlines the project closeout activities for which the Contractor shall be responsible.

1.1.2 The work activities shall include, but not be limited to, the following:

1.1.2.1 Decontamination and removal of all equipment operated by the Contractor.

1.1.2.2 Cleaning the project site.

1.1.2.3 Disconnection and removal of temporary utilities and facilities.

1.1.2.4 Collection and disposal of all Contractor-generated contaminated equipment on the site for which decontamination is inappropriate.

1.1.2.5 Restoration of any disturbed areas outside of the Exclusion Zone.

1.1.2.6 Submittal of the Remedial Action Report.

1.2 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals with an “FIO” designation are for information only. The Contractor shall submit the following to the Government in accordance with SECTION 01330 – SUBMITTAL PROCEDURES.

1.2.1 Remedial Action Report; SD-11 Closeout Submittals; GA

The Contractor shall submit the Remedial Action Report (RAR) as specified in Paragraph 3.7 herein.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 DECONTAMINATION

3.1.1 All contaminated material and equipment shall be decontaminated by the Contractor prior to final removal from the site.

3.1.2 Tools and items for which decontamination is difficult or unachievable shall remain on site

until completion of the work for subsequent packing and disposal by the Contractor at an approved disposal facility. Examples of such items are wire, rope, lumber, PPE and apparel.

3.1.3 Prior to removal from the Site, all decontaminated equipment and material shall be inspected and approved by the Site Safety and Health Officer (SSHO) and the Contracting Officer's field representative.

3.1.4 Certification of decontamination shall be attested to by the SSHO.

3.1.5 A copy of each decontamination certificate shall be provided to the Government.

3.2 TEMPORARY FACILITIES AND UTILITIES

3.2.1 The Contractor shall remove all temporary facilities and associated utilities from the site within 30 days of completion of the project or as directed by the Contracting Officer.

3.2.2 The Contractor shall coordinate with the appropriate utility owners to disconnect the temporary telephone cable and electric service, and remove all associated aboveground wires.

3.3 SITE CLOSURE

At the completion of the work, the Contractor shall restore all areas affected by the construction activities to conditions equivalent to or better than the original conditions or as indicated on the Contract Drawings.

3.4 FINAL ACCEPTANCE INSPECTION

Prior to final inspection, the Contractor shall submit a list of completed final clean-up activities to the Government. The Contractor and the Government shall jointly perform a Final Acceptance Inspection, which shall include an inspection of the site to ensure that all work was completed as outlined in the Contractor's list of final clean-up activities, SECTION 01010 – SUMMARY OF WORK, SECTION 01451 – CONTRACTOR QUALITY CONTROL, and the Contract Drawings. The Contractor shall address any deficiencies immediately.

3.5 REMEDIAL ACTION REPORT

The Contractor shall provide a RA report and data to the Government, in accordance with OSWER Directive 9320.2-22, including, but not limited to, the following, within 90 calendar days of the Final Inspection.

3.5.1 Site background information.

3.5.2 Step-by-step summary of construction activities including the following:

3.5.2.1 Site preparation activities, including mobilization, utility identification, establishing temporary utility connections and facilities, clearing and grubbing, site security, fencing, construction of staging area, construction of a decontamination area, and establishing temporary erosion and sediment

control features.

3.5.2 Construction activities, protection of selected trees, grading methods and quantities, relocation and installation of fencing, sampling methods and data, dust control, erosion control, and perimeter air monitoring and sampling.

3.5.3 Off-site disposal of all waste types including copies of all manifests and land disposal restriction notifications, copies of all certifications of final disposal signed by the responsible disposal facility official, and copies of waste profile sheets.

3.5.4 Site restoration including source of cover material and quantity including physical and chemical tests performed and results; final site grading and cover installation.

3.5.5 Copies of all decontamination certifications.

3.5.6 Project photographs and videos.

3.5.7 Copies of all permits.

3.5.8 List of chronological events.

3.5.9 All inspection and certification reports including punch list items for pre-final and final inspections.

3.5.10 Contact information for the site, including regulatory agencies and the RD/RA contractors.

3.5.11 Assessment and discussion of performance standards and analytical data, including quality assurance and quality control procedures followed.

3.5.12 Operation and maintenance activities including institutional controls.

3.5.13 As-built drawings.

3.5.14 Construction logs.

3.5.15 Observations and lessons learned.

END OF SECTION

SECTION 01800

INSPECTIONS AND MAINTENANCE

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall inspect and maintain remedial action components including covers and stormwater structures for one (1) year after completion of remedial construction.

1.1.2 Inspection requirements for seeded areas are incorporated within SECTION 02930 – LOAMING AND SEEDING.

1.2 SUBMITTALS

The Contractor shall submit the following items in accordance with SECTION 01330 – SUBMITTAL PROCEDURES:

1.2.1 Inspection and Maintenance Plan; SD-01 Pre-Construction; GA

The Contractor shall submit an Inspection and Maintenance Plan 21 days prior to seeding.

1.2.2 Notification of Maintenance Activities; SD-10 O&M Data; FIO

Notification shall be made to the Contracting Officer in the event of unscheduled maintenance activities are required.

1.2.3 Annual Inspection and Maintenance Report; SD-06 Test Reports; GA

The Contractor shall submit an Annual Inspection and Maintenance Report as described in Paragraph 3.3.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 INSPECTION AND MAINTENANCE REQUIREMENTS

Inspections shall document conditions that will have an effect on the integrity of the cover and stormwater structures including but not limited to:

- Erosion of cover materials due to stormwater runoff and/or wind
- Excess vegetation growth with potential to penetrate geofabric demarcation layer
- Exposed and/or damaged geofabric
- Evidence of unauthorized use or disturbance to cover areas
- Buildup of sediment and/or debris within stormwater structures and gabion walls
- Encroachment of vegetation adjacent to and within stormwater structures
- Damage to site fencing

3.1.2 Inspection Schedule

The Contractor shall perform inspections on a quarterly basis and shall notify the Contracting Officer within 24-hours after discovering a condition that will have an effect on the integrity of the cover and/or stormwater structures.

3.1.3 Maintenance

The Contractor shall perform the following maintenance activities in accordance with the Contractor's approved Inspection and Maintenance plan, and/or as directed by Contracting Officer.

3.1.3.1 Repair damages to the cover and stormwater structures due to erosion and/or other forms of disturbance.

3.1.3.2 Mow the seeded area on a quarterly basis, at minimum, or as directed by Contracting Officer.

3.2 INSPECTION AND MAINTENANCE PLAN

The Inspection and Maintenance Plan shall include:

- Schedule for performing inspection and maintenance activities
- Description of procedures for inspection and maintenance activities in accordance with the requirements specified herein

3.3 ANNUAL INSPECTION AND MAINTENANCE REPORT

The Contractor shall submit an Annual Inspection and Maintenance Report within 30 days of the completion of annual inspection and maintenance. The Annual Inspection and Maintenance Report shall include:

3.3.1 General Site Conditions

3.3.2 Photos documenting site structures and conditions, in accordance to SECTION 01380 – PHOTOGRAPHS, including but not limited to:

- Fencing
- Stormwater structures
- Cover areas
- Access roads
- Gabion walls

3.3.3 Documentation of maintenance activities performed

3.3.4 Documentation of corrective measures performed

END OF SECTION

SECTION 02120

SITE PREPARATION

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, materials and equipment required to perform all site preparation as specified herein and presented on the Contract Drawings. This shall include, but not be limited to, installation of sediment and erosion controls, protection of existing vegetation, chain link fence, concrete footings, monitoring wells, pavements and all items shown on the drawings to be protected, confirmation of removal of items noted to be removed by others prior to commencing start of work, clearing and grubbing, removal and disposal of vegetative material, rubbish and debris, demolition and removal of sections of the existing chain link fence and gates along the west property line. Also included are the material handling, segregation, and containerization of all site preparation debris for offsite transportation and disposal in accordance with Section 02130 – Transportation and Offsite Disposal.

1.1.2 The Contractor shall field verify all utilities within the limit of soil cover to ensure that they are not active. The Contractor shall remove the utilities that are not active, not specified to be protected, and interfere with the construction of soil cover per government approval. The existing drainage pipe receiving stormwater from the Second Avenue and the gate house shall be capped, the flow shall be diverted and the riprap swale shall be removed to facilitate the construction. The riprap shall be temporary stockpiled and reused in site restoration.

1.1.2 The Contractor shall obtain all permits required for site preparation work prior to proceeding with the work. All local permit requirements shall be coordinated in advance with the Contracting Officer.

1.1.3 The areas to be cleared, grubbed and stripped generally consist of, but are not limited to, the locations for the temporary site facilities, the excavated soil placement areas within the OU5 site, the locations for the stormwater drainage piping, swale, and water quality basin, access road, parking areas, and all areas that will receive the soil cover layer.

1.2 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referenced by basic designation only.

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

2001 Standard Specifications for Road and Bridge Construction (NJDOTSS)-Section 200 – Earthwork

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:26 Solid and Hazardous Waste Rules

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.1 Permits; SD-07 Certificates; FIO

The Contractor shall submit copies of all permits obtained not submitted under another section.

1.3.2 Site Preparation Plan; SD-01 Pre-construction Submittals; GA

The Contractor shall submit a Site Preparation Work Plan to the Contracting Officer for review and approval. The plan shall include a drawing detailing the limits of clearing and grubbing, the methods that will be used for performing the demolition and removal of the wharf area while preventing any discharge to the Delaware River, and the proposed methods for material handling, segregation, and containerization for offsite disposal.

1.4 DEFINITIONS

1.4.1 Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

1.4.2 Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots, and buried logs. All tap roots, lateral roots, or other projections over 1½ inches in diameter shall be removed within the sediment placement areas.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CLEARING

3.1.1 The Contractor shall cut and remove all timber, trees, stumps, brush, shrubs, roots, grass, weeds, rubbish and any other objectionable material resting on or protruding through the surface of the ground within the required limits. All such work required beyond the required limits shall be subject to approval by the Contracting Officer.

3.1.2 The Contractor shall preserve and protect trees and other vegetation and monitoring wells designated by the Contract Drawing or per direction from Contracting Officer to remain, as specified in Paragraph 3.6 – PROTECTION herein.

3.2 GRUBBING

3.2.1 The Contractor shall grub and remove all stumps, roots in excess of 1½ inches in diameter, matted roots, brush, timber, logs, concrete rubble and other debris encountered to a depth of 18 inches below original grade.

3.2.2 The Contractor shall refill all grubbing holes and depressions excavated below the original ground surface with suitable materials and compact to the surrounding ground surface.

3.3 FENCE REMOVAL

3.3.1 The Contractor shall demolish and remove the chain link as shown on the Contract Drawings. Complete fencing and gate removal shall include all posts, rails, fence fabric and concrete foundations if present.

3.4 DEMOLITION AND RUBBISH REMOVAL

3.4.1 The Contractor shall demolish and excavate a portion of an existing asphalt walk located within the site perimeter as shown on the Contract Drawings. The asphalt pavement shall be cut with a saw, wheel, or pneumatic chisel along straight lines before excavating. The asphalt demolition debris will be disposed of off-site in accordance with SECTION 02130 – TRANSPORTATION AND OFFSITE DISPOSAL.

3.4.2 The Contractor shall include the demolition of other items that must be removed to prevent interference with subgrade elevations and base grading, including, but not limited to concrete foundations and piping, fencing, railroad ties, or other debris except where noted on the Contract Drawings.

3.4.3 The Contractor shall collect trash, rubbish, and other debris from all work areas for offsite disposal, including along the shoreline.

3.4.4 The Contractor shall perform all demolition and rubbish removal work in accordance with their approved Site Preparation Plan.

3.5 REUSE AND DISPOSAL

3.5.1 Clearing and grubbing materials containing soil, roots, and leaf matter are considered contaminated and will be characterized in accordance with SECTION 01450 – CHEMICAL DATA QUALITY CONTROL and disposed of off-site in accordance with SECTION 02130 – TRANSPORTATION AND OFFSITE DISPOSAL.

3.5.2 If temporarily stockpiled before disposal, mulched material or wood chips shall be stockpiled in small piles in specific areas shown in the Contract Drawings as to not catch on fire due to decomposition heat. Clean chipped materials shall be considered for reuse onsite per approval from Government.

3.5.3 The Contractor shall dispose of the other rubbish and debris from site preparation activities at an approved offsite disposal facility in accordance with SECTION 02130 – TRANSPORTATION AND OFFSITE DISPOSAL. No rubbish or debris of any kind shall be buried on the project site.

3.5.4 Burning of cleared and grubbed materials or other fires for any reason will not be permitted.

3.6 PROTECTION

3.6.1 Prior to performing site preparation activities, the Contractor shall document existing site conditions via photographs and/or videotape, in accordance with SECTION 01380 – PROJECT PHOTOGRAPHS and SECTION 01381 – VIDEOTAPING and shall report in writing to the Contracting Officer prior to the commencement of any site preparation work.

3.6.2 Monitoring wells, Trees and other vegetation designated to remain as shown in the Contract Drawings or by the Contracting Officer shall be protected from damage during construction by erecting suitable barriers, guards and enclosures, or by other approved means for monitoring wells and gabion wall barrier as shown in Contract Drawings for tree protection. Clearing of any other trees encountered within the limits of construction requires approval from the Contracting Officer prior to clearing. Clearing operations shall be conducted in a manner to prevent falling trees from damaging buildings, fencing, trees and vegetation designated to remain and to the work being constructed and so as to provide for the safety of employees and others. Protection shall be maintained until the clearing is completed.

3.6.3 The Contractor shall not destroy or damage trees and shrubs outside the limits of construction, without the authority of the Contracting Officer. Existing site features that are damaged outside the limits of construction shall be promptly restored to their original condition or better, as approved by the Contracting Officer.

3.7 DECONTAMINATION FACILITIES

Decontamination facilities shall be construction in accordance with SECTION 01500 - TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES and the Contract Drawings.

3.8 PROTECTION OF PUBLIC STREETS

The Contractor shall place NJDOT No. 1 crushed stone at site entrances/exits in accordance with SECTION 01500 - TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES, the New Jersey Standards for Soil and Erosion Control, New Jersey State Soil Conservation Committee, July 1999, and the Burlington County Soil Conservation District requirements to minimize mud/dirt tracked onto public streets by the construction vehicles.

END OF SECTION

SECTION 02130

TRANSPORTATION AND OFFSITE DISPOSAL

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, materials, equipment and incidentals necessary for transportation and offsite disposal of waste materials. Waste materials refer to any and all materials including, but not limited to: debris encountered from clearing and grubbing operations, cleared and grubbed materials, debris from asphalt pavement demolition, decontamination water, and any other excess/waste or site preparation material unsuitable for backfilling within the OU5 soil cover area.

1.1.2 The Contractor shall characterize all waste in accordance with the sample requirements and methodology included in SECTION 01450 – CHEMICAL DATA QUALITY CONTROL and as required by the offsite disposal facilities.

1.1.3 The Contractor shall ensure that all operations for loading and hauling of wastes are in compliance with Federal and State Department of Transportation (DOT) regulations, and all other applicable Federal, State, and local requirements.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of the standards below, the revision in effect at the time of contract award shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1117	Standard Guide for Evaluating Non-woven Fabrics
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CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1904, 1910 and 1926	Occupational Safety and Health Administration (OSHA) Standards
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40 CFR 262	Regulations for Hazardous Waste Generators
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40 CFR 263	Regulations for Hazardous Waste Transporters
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49 CFR 100-179	Hazardous Material Transportation Act (United States Department of Transportation [USDOT])
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49 CFR 173	Shippers – General Requirements for Shipment and Packaging
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49 CFR 178	Specifications for Packaging
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FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

Public Law 94-580

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA Toxic Substances Control Act (TSCA)

EPA OSWER Directive No. 9834.11

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

N.J.A.C. 7:26 Solid and Hazardous Waste Management Regulations

UNITED STATES ARMY CORP OF ENGINEERS (USACE) ENGINEER PAMPHLET (EP)

EP 415-1-266 Resident Engineer Management Guide for Hazardous, Toxic, and
Radioactive Waste Projects

1.3 SUBMITTALS

1.3.1 Waste Management Plan; SD-01 Pre-Construction Submittals; GA

The Contractor shall prepare and submit to the Contracting Officer for approval a Transportation Plan which shall include the proposed truck routing from the Site to the disposal facility. The route to and from the disposal facility shall be in accordance with both local and disposal facility requirements and shall be approved by the Contracting Officer prior to commencing work. The Plan shall also cover all aspects and considerations for waste transportation hazards that will be involved during hauling operations. The Plan shall include, but not be limited to, the following: procedures for incident response, methods to contain and clean up spills, details of manpower and equipment available and the coordination necessary to mobilize forces in an emergency. Response shall be implemented within one hour following any accident or release of contaminated material, as directed by the Contracting Officer and at the Contractor's expense. The Plan shall also include a list of the types of materials to be transported, the types of transport vehicles to be used for each type of material, and the packaging and transporting requirements for each type of waste, including any special requirements of the disposal facility.

The Transportation Plan shall be submitted at least 21 days prior to the Pre-Work Conference. The Contracting Officer will review the Transportation Plan and return it to the Contractor with comments. Deficiencies in the Transportation Plan will be discussed at the Pre-Work Conference. The Contractor shall make all necessary amendments required by the Contracting Officer and resubmit it for approval. This procedure shall continue until the Contracting Officer gives final written approval. The Contractor shall make necessary effort so that only one resubmittal is required.

The Contractor shall provide the Emergency Response Name and Telephone number that will be available on a 24/7 basis during the shipment period, and this information will be included in the Shipments Manifests as per the USDOT Regulations.

1.3.2 Notice of Non-Compliance and Notice of Violation; SD-03 Product Data; FIO

The Contractor shall immediately notify and provide copies of notice of non-compliance or notice of violation to the Contracting Officer when such notice is issued by a Federal, State or local regulatory agency to the Contractor in relation to any work performed under this contract. The Contractor shall also furnish all relevant documents regarding the incident and any information requested by the Contracting Officer and shall coordinate its response to the notice with the Contracting Officer or his designated representative prior to submission to the notifying authority. The Contractor shall also furnish a copy to the Contracting Officer of all documents submitted to the regulatory authority, including final reply to the notice, and all other materials, until the matter is resolved.

1.3.3 Transport Certification; SD-07 Certificates; FIO

The Contractor shall submit certification that all operators and vehicles used to transport contaminated material meet all existing Federal, State and local regulations for vehicle operations.

1.3.4 Annual and Biennial Reports; SD-06 Test Reports; GA

Information necessary to file State annual or EPA biennial reports for waste transported or disposed of under this contract shall be submitted to the Contracting Officer at the specified time and shall not be forwarded directly to the regulatory agency. The submittal shall contain all the information necessary for filing of the formal reports in the form and format required by the governing Federal, State and local regulatory agency. A cover letter shall accompany the data including the contract number, Contractor name and project locations.

1.3.5 Exception Reports; SD-06 Test Reports; GA

In the event that a manifest copy documenting receipt of hazardous waste at the offsite disposal facility is not received within 35 calendar days of shipment initiation, the Contractor shall prepare and submit an exception report to the Contracting Officer within 37 days of shipment initiation.

1.3.6 Shipping Documents and Packaging Certification; SD-07 Certificates, GA

All transportation related shipping documents shall be submitted to the Contracting Officer, including draft waste manifests, draft bills of lading, lists of corresponding proposed labels, packages, marks, and placards to be used for shipment, waste profiles, supporting waste analysis documents, for review a minimum of 14 calendar days prior to the anticipated shipping date. Packaging assurances shall be furnished prior to transporting the material, "generator copies" of hazardous waste manifests, bill of landings, and supporting waste analysis documents shall be furnished when shipments are originated.

1.3.7 Certificates of Disposal; SD-07 Certificates; FIO

Certificates documenting the ultimate disposal of wastes within 180 calendar days of initial shipment. Receipt of these certificates will be required for final payment.

1.3.8 Disposal Facility Names and Permits; SD-01 Pre-Construction Submittal, GA

The Contractor shall submit the name and permits of waste disposal facilities to the Contracting Officer for approval. A primary and an alternative facility shall be provided for all types of waste expected to be generated.

1.4 PERMIT REQUIREMENTS

The Contractor shall be responsible for obtaining any and all permits required for offsite transportation of waste in accordance with applicable Federal, State and local regulations.

1.5 LAWS AND REGULATORY REQUIREMENTS

Work shall meet or exceed the minimum requirements established by Federal, State, and local laws and regulations which are applicable. These requirements are amended frequently and the Contractor shall be responsible for complying with amendments as they become effective. In the event that the compliance exceeds the scope of work or conflicts with specific requirements of the contract, the Contractor shall notify the Contracting Officer immediately. At a minimum the requirements, stipulated in the regulations referenced in Paragraph 1.2 – References shall be met.

PART 2 PRODUCTS

2.1 CONTAINERS

2.1.1 Shipping Containers

Impermeable containers shall be suitable to receive and retain contaminated materials until they are disposed of at an approved facility. The containers shall meet the standards of a “Strong, Tight Container” and conform to USDOT Standard 49 CFR 173.24. Containers in a shipment must be loaded and braced securely to prevent shifting and damage during transport. Cover systems shall meet the criteria for a closed transport vehicle as specified in 49 CFR 173.403.

2.1.2 Drums

All drums shall be type USDOT 17H or 17E as specified in 49 CFR 173 and in accordance with NJAC 7:26-7.2(b), 9.3 and 9A.

2.2 LABELING

The Contractor shall provide primary and subsidiary labels for materials/wastes consistent with the Federal, State and local requirements. Labels shall be durable and weather resistant and capable of

withstanding, without deterioration or substantial color change, a 180-day exposure to conditions reasonably expected to be encountered during container storage and transportation.

2.3 PLACARDS

For each off-site shipment of materials/wastes, the Contractor shall provide primary and subsidiary placards as required by Federal, State and local regulations. Placards shall be provided for each side and each end of bulk packaging, freight containers, transport vehicles, and rail cars requiring such placarding. Placards may be plastic, metal, or other material capable of withstanding, without deterioration, a 30-day exposure to open weather conditions.

2.4 TARPAULINS

Waterproof tarpaulins shall be nylon vinyl-coated on both sides with a tearing strength of 70 lbs conforming to ASTM D 1117, or equal. All edges shall be hemmed, with reinforced grommets on maximum 4 feet on centers.

2.5 SPILL RESPONSE MATERIALS

The Contractor shall provide spill control materials and equipment which are sufficient to meet the requirements described in SECTION 01351 – SAFETY, HEALTH, AND EMERGENCY RESPONSE.

2.6 EQUIPMENT AND TOOLS

The Contractor shall provide miscellaneous equipment and tools necessary to handle hazardous materials and hazardous wastes in a safe and environmentally sound manner.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 The Contractor shall ensure that all transport vehicles containing waste be covered with tarps before leaving the site.

3.1.2 The Contractor shall coordinate the schedule for vehicle arrival and material deliveries at the construction site to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations. No claims shall be made by the Contractor for additional compensation due to a delay in the schedule related to vehicle arrival or material availability.

3.1.3 The Contractor shall organize and maintain the material shipment records required by the Federal and the State of New Jersey regulations.

3.1.4 The Contractor is responsible for obtaining and filling out waste profile sheets required by the disposal facility. The quantity of sheets per contained waste shall be in accordance with Federal, State or local regulations. The Contractor shall submit each profile sheet to the Contracting Officer.

3.1.5 The Contractor shall utilize transporters having proper EPA identification numbers and NJDEP hauler registrations, and shall assure through the manifest system that the waste arrives at the authorized offsite disposal facility. The Contractor shall report to the Contracting Officer any shipments that do not reach the disposal facility.

3.1.6 The Contractor shall notify the Contracting Officer immediately upon learning that a job-related accident has occurred. Notification of the accident shall include location of the accident, resultant damage or injury, person(s) involved, probable cause, amount of waste spilled, and any other pertinent information concerning the accident.

3.1.7 Accident cleanup operations shall be performed as directed by the Contracting Officer at the expense of the Contractor. Cleanup shall be performed immediately.

3.1.8 The Contractor shall provide transportation of the waste directly to the disposal facility.

3.1.9 The Contractor shall provide all sampling and analytical services necessary for disposal in accordance with disposal facility requirements, and all applicable Federal, State, and local regulations.

3.2 WASTE HANDLING

Solid waste material shall be stockpiled and covered or loaded into roll-off containers using a loading system approved by the Contracting Officer. The roll-off containers shall be used for storage of construction and demolition debris. Temporary stockpiles shall be covered with plastic sheeting, or equivalent material to protect waste from adverse weather conditions and to prevent dust emissions. Erosion and sedimentation controls shall be installed around all stockpiles.

Hazardous waste shall be stored in 55-gallons drums. Drums shall be placed on wooden pallet or equivalent material and shall be stored in an area approved by the Contracting Officer. Drums shall be secured tight prior to transport to the temporary storage area. Secondary containment shall be provided for liquid hazardous wastes in storage.

3.3 WASTE LOADING AND VEHICLE INSPECTION

3.3.1 The Contractor shall provide equipment that is appropriate to accomplish this type of work and shall maintain and use of it in strict compliance with Occupational Safety and Health Administration (OSHA) requirements. The Contractor shall take all necessary precautions for safe operation of the equipment and the protection of the public from injury and damage from such equipment.

3.3.2 Vehicles may be inspected by the Contracting Officer at the site prior to loading to ensure that the vehicles have no fluids leaks, no unusually noisy mufflers or tailpipes, tires that are in good condition, and operational brakes, horn, steering, operating controls, and safety devices. Vehicles shall be free of excess dirt, debris, oil, grease, and excessive rust. Vehicle beds used for hauling shall be free from drain holes, cracks, or other conditions that might permit waste material or contaminated water to leak from the vehicle beds. If the vehicle used for hauling has tailgates for dumping, the Contractor shall demonstrate to the Contracting Officer that the tailgates can be sealed watertight during operation. Any vehicle bed not providing an adequate leakproof seal shall be repaired or replaced as required. Tarpaulin covers shall be placed over all vehicle beds during waste transport to the disposal facility. Covers shall be

placed over trucks, trailers or other conveyances used for bulk shipment to avoid spillage of the waste material and entrance of rain or snow during transport. The covers shall completely enclose the bulk shipment with no open areas along the sides or openings on the top. Cover systems shall meet the criteria for a closed transport vehicle as specified in 49 CFR 173.403(c). Failure of the shipping container, liner, seals, hatches, doors, or tarpaulin system to meet the above requirements which causes material to be rejected by disposal facility shall be addressed at the Contractor's expense.

3.3.3 The Contractor shall coordinate recording quantities of waste leaving the site with the Contracting Officer.

3.3.4 Vehicles/containers, either empty or loaded, shall not remain at the site, unless specific arrangements are made otherwise. Immediately after loading, they shall be sealed, weighed and transported directly to the disposal facility.

3.3.5 The Contractor shall provide clean containers/hauling vehicles for loading during normal work hours.

3.4 TRANSPORTATION

3.4.1 The Contractor shall meet all existing Federal, State, and local regulations for vehicle operations in transporting the waste on public roads and highways. All haul and access roads shall be maintained in a clean condition so that no dirt or contamination is tracked onto clean areas or public roads and highways.

3.4.2 The Contractor shall be responsible for any and all actions necessary to remedy situations involving material spilled in transit on or off site or mud and dust tracked off site. This cleanup shall be accomplished at the Contractor's expense.

3.4.3 Transportation routes to and from project areas shall be in accordance with the approved Transportation Plan. No deviation from transportation routes shall be allowed without prior written approval from the Contracting Officer.

3.4.4 The Contractor shall be responsible for all repair costs for damages to structures, roads, bridges and any other features affected by the Contractor's offsite transportation and disposal operations.

3.5 OFFSITE DISPOSAL

3.5.1 The Contractor shall be responsible of coordinating the proposed modes of transportation and scheduling and notification of all shipments with the disposal facility. The Contractor shall notify the Contracting Officer in writing within 14 calendar days of any problems or issues which occur during transportation to the disposal location. This notification shall include any damage to containers during transportation and any scheduling conflicts with the disposal subcontractor which may adversely impact project schedule or cost.

3.5.2 The Contractor shall provide for the weighing of each loaded container by a certified weigh-master at a State-certified scale at the disposal facility. Shipping documentation shall be faxed to the

Contracting Officer immediately after each load container is weighed. The Contractor shall provide the Contracting Officer with an original copy of the shipping documentation within two days following shipment.

3.5.3 The Contractor shall be responsible for all wastes until they are accepted by the disposal facility. It is the Contractor's responsibility to ensure that all waste shipments are in compliance with the disposal facility's requirements at the time of receipt of the shipments at the disposal facility.

3.5.4 The Contractor shall maintain communication throughout the transportation process associated with each shipment to ensure adequate notification of scheduled arrival times for containers reaching the site. The Contractor shall be responsible for all delays in turnaround time for transport vehicles.

3.6 RECORDKEEPING

The Contractor shall be responsible for maintaining adequate records to support information provided to the Contracting Officer regarding exception reports, annual reports and biennial reports.

3.7 SPILL RESPONSE

The Contractor shall respond to any spill of contaminated material which is in custody or care of the Contractor, pursuant to this contract in accordance with SECTION 01351 – HEALTH, SAFETY, AND EMERGENCY RESPONSE.

END OF SECTION

SECTION 02230

EARTHWORK AND GRADING

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, materials, equipment and incidentals required to perform excavation, backfill, and grading to complete the work, as shown on the Contract Drawings and/or specified herein.

1.1.2 The Contractor shall excavate and perform subgrading across portions of the site as shown on the Contract Drawings. Excavated material shall be used as backfill for other areas requiring grade increase or improvement within the OU5 soil cover limits only. Additional clean fill material, shall be imported as necessary, in accordance with this specification and SECTION 01450 – CHEMICAL DATA QUALITY CONTROL. Common fill will only be used in subgrading if there is not enough excavated site soil.

1.1.3 The Contractor shall perform earthwork as necessary to construct the stockpile areas for the OU5 excavated clearing and grubbing materials, including construction of any required erosion and sediment control measures such as silt fences and soil berms.

1.1.4 The Contractor shall perform earthwork as necessary to install storm water drainage features such as infiltration areas.

1.1.5 The Contractor shall perform earthwork to place common fill as shown on the Contract Drawings.

1.1.6 The Contractor shall perform earthwork and final grading to place an 18-inch thick layer of imported clean soil cover over the entire OU5 soil cover area, as shown on the Contract Drawings. Placement of 6-inch thick layer of top soil (loam) and seeding over the soil cover layer shall be in accordance with SECTION 02930 – LOAMING AND SEEDING.

1.1.7 All excavation, trenching and related sheeting, bracing, etc. if required, shall comply with the requirements of Occupational Safety and Health Administration (OSHA) excavation safety standards as specified in 29 CFR Part 1926.650 Subpart P and all applicable Federal, State and local laws, regulations, and requirements. All excavation work shall be conducted in accordance with the Contractor's approved Site Safety and Health Plan (SSHP).

1.1.8 Dust control measures shall be employed at all times. Perimeter air monitoring shall be performed in accordance with SECTION 01362 – PERIMETER AIR MONITORING.

1.1.9 Prior to performing any excavation activities, the Contractor shall contact the New Jersey "One Call" system (1-800-272-1000) to mark out all underground utilities. The locations of utility lines are approximate on the Contract Drawings and shall be field verified by the Contractor prior to any excavation.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C33	Standard Specification for Concrete Aggregates (latest version)
ASTM C 127	Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate (latest version)
ASTM C 131	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine (latest version)
ASTM C 295	Petrographic Examination of Aggregates for Concrete (latest version)
ASTM D 421	Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
ASTM D 422	Particle-Size Analysis of Soils
ASTM D 698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 1556	Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (latest version)
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

CODE OF FEDERAL REGULATION (CFR)

29 CFR 1926 Subpart P	Safety and Health Regulations for Construction - Subpart P: Excavations, Sections 650-652
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NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

2001 Standard Specifications for Road and Bridge Construction (NJDOTSS), and all addenda and supplements thereto, latest edition.

STATE OF NEW JERSEY (NJ)

New Jersey Standards for Soil Erosion and Sediment Control (SESC), New Jersey State Soil Conservation Committee, July 1999

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01300- SUBMITTAL PROCEDURES:

1.3.1 Samples of Proposed Fill; SD-04 Samples; GA

The Contractor shall submit to the Contracting Officer samples of earthen materials weighing approximately 50 pounds. The Contractor shall not use these materials as part of the contract work until receiving written authorization from the Contracting Officer.

1.3.2 Laboratory and Field Test Results; SD-06 Test Reports; GA

The Contractor shall submit the results of all laboratory and field testing, as specified in Paragraph 2.2 CONFORMANCE TESTING, to the Contracting Officer within 24 hours of their receipt/completion. These shall include the results of all chemical testing, sieve analyses performed, in-place density testing, moisture-density testing, shear strength and bearing capacity testing, and all other testing performed of backfill materials and compaction requirements. Chemical sampling results will be submitted in accordance with SECTION 01450 – CHEMICAL DATA QUALITY CONTROL.

1.3.3 Backfill Materials Sources and Certification; SD-07 Certificates; GA

The Contractor shall submit to the Contracting Officer, for approval, the proposed source for all backfill materials including backfill (select and common), topsoil for seeding area, organic-rich loam topsoil for the infiltration area, rip rap, dense graded aggregate, and crushed stone. The Contractor shall include certificates of compliance attesting that materials meet the specified requirements for particle size, pH, organic matter content, textural class, soluble salts, chemical, and mechanical analyses.

1.3.4 Laboratory Certification Credentials; SD-07 Certificates; GA

The Contractor shall submit to the Contracting Officer, for approval, licenses or certifications of qualifications of the commercial testing laboratory and/or associated personnel for the Contractor's testing facilities, for the performance of field and laboratory testing.

1.4 DEFINITIONS

1.4.1 Satisfactory materials

Satisfactory materials for common backfill shall comprise any virgin offsite materials classified by ASTM D2487 as GW, SW, GC, GM, SC and SM. The testing requirements for classifying materials shall be in accordance with the standards of ASTM D4318 and ASTM D422. Material shall be free of organic material, frozen material, rubbish, or other unsuitable materials. Satisfactory materials shall meet the criteria outlined in Paragraph 1.5 CERTIFICATION OF MATERIALS and shall meet the requirements of Part 2 – PRODUCTS of this specification.

1.4.1.1 Common backfill

Fill used in the silt fences, soil berms, soil cover, and other areas specified as common fill in the Contract Drawings, as well as anywhere else not otherwise specified shall be considered common fill.

1.4.2 Unsatisfactory Materials

Unsatisfactory materials shall comprise any materials not meeting the standards of Paragraph SATISFACTORY MATERIALS. This shall include any contaminated materials/soils, trash/refuse, materials containing frozen or excessive organic matter, or materials classified by ASTM D 2487 as PT, OH and OL.

1.5 CERTIFICATION OF MATERIALS

1.5.1 All materials used as fill, including common fill, standard topsoil, organic-rich loam topsoil, and crushed stone shall be tested to ensure they are free from chemical contamination as indicated in SECTION 01450 - CHEMICAL DATA QUALITY CONTROL. Results shall be certified in writing. The Contracting Officer will accompany the Contractor to visit all backfill sources. A minimum of one chemical test shall be performed per 5,000 cubic yards (cy) of material and no less than one test per borrow area. Additional tests shall be performed at a frequency of one sample per 5,000 cubic yards of material or as requested by the Contracting Officer.

1.5.2 Analytical parameters to verify that fill materials are free of chemical contamination are included in SECTION 01450 - CHEMICAL DATA QUALITY CONTROL.

1.6 QUALITY ASSURANCE

1.6.1 Laboratory Testing

1.6.1.1 At least seven (7) days prior to the placement of any fill materials, deliver a representative sample of the proposed materials weighing at least 50 lbs to the soils testing laboratory in accordance with SECTION 01300 – SUBMITTAL PROCEDURES.

1.6.1.2 Engage the soils testing laboratory to perform:

- a) Grain size analyses (ASTM D422) of the samples to determine their suitability for use as backfill or fill material in conformance to the materials requirements specified herein.
- b) The appropriate Proctor analyses to determine the maximum dry densities required for compaction testing as specified elsewhere in the Contract Documents.

1.6.1.3 Test results and determinations of suitability shall be delivered to the Contracting Officer no later than 3 days prior to the placement of backfill or fill materials.

1.7 DELIVERY, STORAGE AND HANDLING

1.7.1 If granular fill materials are delivered to the site prior to placement approval, materials shall be stockpiled on site in areas as directed by the Contracting Officer. Provision shall be implemented to minimize surface water impact on the stockpile. Removal and placement of granular fill material shall be done in a manner to minimize intrusion of soils adjacent to and beneath the stockpile.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Backfill and fill materials shall be suitable excavated materials, natural or processed mineral soils obtained from off-site sources, or graded crushed stone or gravel. Backfill and Fill materials shall be free of all organic material, trash, snow, ice, frozen soil, or other objectionable materials which may be compressible or which cannot be properly compacted. Soft, wet, plastic soils which may be expansive, clay soils having a natural, in-place water content in excess of 30 percent, soils containing more than 5 percent (by weight) fibrous organic materials, and soils having a plasticity index greater than 30 shall be considered unsuitable for use as backfill and fill.

2.1.2 Common Fill (except when used in the soil cover) shall not contain any stone, concrete, or brick fragment larger than 6-in in any dimension and shall have a maximum of 40 percent passing No. 200 Sieve. Common Fill shall have physical properties, as approved by the Contracting Officer, such that it can be readily spread and compacted.

2.1.3 Common Fill used for the soil cover shall not contain granite blocks, broken concrete, masonry, rubble, asphalt pavement, or any similar material. It shall not contain any stone larger than 6-in in any dimension and shall have a maximum of 75 percent passing the No. 40 sieve and a maximum of 20 percent passing No. 200 Sieve. Common Fill shall have physical properties, as approved by the Contracting Officer, such that it can be readily spread and compacted.

2.1.4 Select Common Fill shall conform to the requirements of Section 901 of the NJDOTSS, Standard Soil Aggregate I-2:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
2-in	100
¾-in	65-100
No. 4	40-75
No. 50	5-30
No. 200	0-7

2.1.5 Crushed Stone (screened gravel) shall be used for the haul road, access road, ramps and other areas specified in the Contract Drawings shall conform to the No. 3 Stone specified in Section 901 of the NJDOTSS, current edition, and all addenda and supplements thereto.

2.1.6 Protective Layer Cover Common Fill for use as travel surface within the storage pad, loading pads and other areas specified in the Contract Drawings shall be rounded, bank run gravel with gradation as determined by ASTM D422 within the following limits:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
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2-in	100
1-1/2-in	90-100
1-in	20-55
¾-in	0-15
3/8-in	0-5
No. 200	0

2.1.7 Infiltration Area Fill for use above the storage pad, loading pads liner, as well as other areas specified in the Contract Drawings shall be inorganic, non-calcareous, sand and gravel free from organic matter and other deleterious material. Gradation of the granular fill for use as infiltration layer fill as determined by ASTM D422 shall be within the following limits:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
4-in	100
No. 4	30-80
No. 40	10-50
No. 200	0-10

2.1.8 Dense Graded Crushed Stone shall be hard, durable, rounded, or sub-angular particles of proper size and gradation, and shall be free from sand, loam, clay, excess fines, and other deleterious materials. It shall be placed in layers having a maximum thickness of 6-inches measured before compaction and shall be compacted to 95 percent of the maximum density as determined by ASTM D1557. Dense Graded Crushed Stone shall be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
2-in	100
1-1/2-in	70-100
¾-in	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

2.1.9 Processed Gravel shall be hard, durable, rounded, or sub-angular particles of proper size and gradation, and shall be free from sand, loam, clay, excess fines, and other deleterious materials. Processed Gravel shall be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3-in	100
1-1/2-in	70-100
1/4-in	50-85
No. 4	30-60
No. 200	0-10

2.1.10 Staples for installing Erosion Control Blanket shall be made of wire, 0.091-in in diameter or

greater, "U" shaped, with legs 6-in in length and a 1-in crown.

2.1.11 Infiltration area soil shall consist of the following mix, by weight: 85 to 95 percent sands, with no more than 25 percent of the sands as fine or very fine sands; no more than 15 percent silt and clay with 2 to 5 percent clay content. The entire mix shall then be amended with 3 to 7 percent organics. The mix must be certified by either the vendor who premixes the soil or by a professional engineer licensed by the State of New Jersey present during any on-site soil material mixing. The material's pH shall be in the range from 5.5 to 6.5.

2.1.12 Filter fabric shall be Mirafi Type 100X or equal.

2.1.13 Plastic marker warning barrier shall be orange mesh, Type SM60 as manufactured by Roadtech Manufacturing Inc; Oak Park, IL or equal.

2.2 CONFORMANCE TESTING

The Contractor's Quality Control Laboratory shall conduct initial conformance tests to show that the Common Fill materials meet the specification requirements and to identify the compaction properties of the soils. At a minimum, the tests listed below shall be conducted for each material and submitted as initial conformance test results. In addition, periodic conformance testing shall be conducted by the Contractor's Quality Control Laboratory on Common Fill soils prior to their use on the project. Unless otherwise specified, the following tests shall be at the indicated frequencies:

<u>Test</u>	<u>Method</u>	<u>Frequency</u>
Grain Size	ASTM D422	Every 5,000 cy
Atterberg Limits	ASTM D4318	Every 5,000 cy
Laboratory Moisture/Density	ASTM D1557	Every 5,000 cy, or change in material
Natural Moisture	ASTM D2216	Every 5,000 cy
Organic Content	ASTM D2974	As required

Results of the tests shall be submitted to the Contracting Officer within 24 hours of test completion and prior to material use on the project. The Contracting Officer reserves the right to reject material based on the results of these conformance tests and/or independent quality assurance testing conducted by the Contracting Officer. Rejected materials shall be removed from the site at no cost to the Government.

2.3 IMPORTED MATERIAL ACCEPTANCE

2.3.1 The presence of any compound above the requirements of Section 1.5.1 herein shall be reason to reject the source, regardless of other test results.

2.3.2 If tests by the Subcontractor or the Contractor indicated that the material does not meet Specification requirements, material placement shall be terminated until corrective actions are taken. Material that does not conform to the Specification requirements and is placed in the work shall be removed and replaced at the Subcontractor's sole expense.

PART 3 EXECUTION

3.1 FILL PLACEMENT AND COMPACTION

3.1.1 The Contractor shall compact each lift of common fill as specified herein. Compaction in soil areas shall be accomplished by sheepsfoot rollers, pneumatic tired rollers, steel wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

3.1.2 The Contractor shall be responsible for providing appropriate compaction effort to achieve the Minimum Percent of Laboratory Maximum Density (Modified Proctor) as outlined in this specification.

3.1.3 Common fill may be used as trench backfill for installation of geofabric and other areas as shown on the Contract Drawings. Material conforming to the requirements of common fill shall be placed in layers having a maximum thickness of 1 foot measured before compaction. Lift thickness should be reduced to 6 inches in confined areas accessible only to hand guided compaction equipment. Common fill shall be compacted to at least 95 percent of maximum density as determined by ASTM D1557.

3.1.4 Approved compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and recompactd to the required density, prior to further construction.

3.1.5 Compacted stone (screened gravel, dense graded crushed stone, processed gravel, and crushed stone) shall be placed in layers having a maximum thickness of 6-inches measured before compaction and shall be compacted to 95 percent of the modified Proctor (ASTM D1557) maximum dry density. Broken pieces of concrete, asphalt, or brick are not acceptable.

3.1.5 Fill and backfill shall not be placed and compacted when the materials are too wet to properly compact. Material which is too wet shall be spread on the fill area and permitted to dry, assisted by harrowing if necessary, until the moisture content is reduced to allowable limits.

3.1.6 Soil placed in fill areas shall be deposited to the lines and grades shown on the Drawings making due allowance for settlement of the material.

3.1.7 If the Contracting Officer shall determine that added moisture is required, water shall be applied by sprinkler tanks or other sprinkler systems, which shall ensure uniform distribution of the water over the area to be treated, and give complete and accurate control of the amount of water to be used. If too much water is added, the area shall be permitted to dry before compaction is continued.

3.1.8 The Contractor shall supply all hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment, and all other materials and equipment necessary to place the water in the fill in the manner specified. Water shall be provided and obtained from local fire hydrant at the Contractor's expense.

3.1.9 The surfaces of filled areas shall be graded to smooth true lines, strictly conforming to grades indicated on the grading plan and no soft spots or uncompacted areas will be allowed in the work.

3.1.10 Materials placed in fill areas shall be deposited to the lines and grades shown on the Drawings,

or in Submittals, making due allowance for settlement of the material.

3.1.11 No fill placement or compaction shall be done when the material is covered with frost or frozen or is too wet either from rain or from excess application of water. At such times, work shall be suspended until the previously placed and new materials have thawed and/or dried sufficiently to permit proper compaction.

3.1.12 Protective Cover Common Fill shall be placed and compacted with Low Ground Pressure (LGP) bulldozers.

3.2 EXCAVATION AND FILL

3.2.1 Disposal of Materials

3.2.1.1 Excavated material shall be stacked near low-lying areas that are expected to require fill during subgrading. This will be done without obstructing free access to the site.

3.2.1.2 It is expressly understood that no excavated material shall be removed from the site of the work or disposed of by the Contractor except as directed by the Contracting Officer. When removal of surplus materials has been approved by the Contracting Officer, the Contractor shall dispose of such surplus material in approved areas designated by the Contracting Officer after characterizing the materials in accordance with SECTION 01450 - CHEMICAL DATA QUALITY CONTROL.

3.2.2 Excavation and Backfill

3.2.2.1 Backfill shall be brought up evenly on all sides. Each layer of fill material shall be thoroughly compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping, to 95 percent compaction as measured by ASTM D1557.

3.2.2.2 Subject to the approval of the Contracting Officer, fragments of ledge and boulders smaller than 6 inches may be used in backfill provided that the quantity, in the opinion of the Contracting Officer, is not excessive. Small stones and rocks shall be placed in thin layers alternating with earth to ensure that all voids are completely filled.

3.2.2.3 Bituminous paving shall not be placed in backfilling unless specifically permitted, in which case it shall be broken up as directed. Frozen material shall not be used under any circumstances.

3.2.2.4 All road surfaces shall be broomed and hose-cleaned immediately after backfilling. Dust control measures shall be employed at all times.

3.2.2.5 The surface of any driveway or any other area which is disturbed by the base grading and which is not a part of the paved road shall be restored by the Contractor to a condition at least equal to that existing before work began.

3.2.2.6 Excavation equipment shall be satisfactory for carrying out the work in accordance with the Specifications.

3.2.2.7 When excavation for subgrading has reached prescribed depths, the Contracting Officer shall be

notified and he will inspect conditions. If materials and conditions are not satisfactory to the Contracting Officer, the Contracting Officer will issue instructions as to the procedures, and if additional costs are involved, adjustments of the contract will be made on the basis of unit prices agreed upon by the Contracting Officer and the Contractor in accordance with the provisions of the contract documents.

3.2.2.8 During final excavation to subgrade level, Contractor shall take necessary precautions to prevent disturbance and remolding. Material which has become softened and mixed with water shall be removed. Hand excavation of the final 3 to 6-in will be required as necessary to obtain a satisfactory undisturbed bottom. The Contracting Officer will be the sole judge as to whether the work has been accomplished satisfactorily.

3.2.3 Protection

3.2.3.1 Curbing, tress, monitoring, driveway aprons and fencing in the vicinity of the Contractor's operations shall be adequately protected, and if necessary removed and restored or replaced after backfilling. All curbing, driveway aprons and fencing which are damaged during construction shall be replaced with material fully equal to that existing prior to construction.

3.3 GRADING

3.3.1 Grading shall be performed to the lines, grades and elevations shown on the Drawings and in accordance with the Contractor's approved submittal of final site grades. During the process of grading, the area to be graded shall be maintained in such condition that it shall be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the prosecution or condition of the work.

3.3.2 If at the time of grading it is not possible to place any material in its final location, it shall be stockpiled in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.

3.3.3 The right is reserved to make minor adjustments or revisions in lines or grades if found necessary as the work progresses, in order to obtain satisfactory construction.

3.4 INFILTRATION PLANTING SOIL

3.4.1 Infiltration area soil shall be placed in 6- to 12-inch lifts, making due allowance for settlement of the material.

3.5 QUALITY CONTROL PROGRAM

3.5.1 An independent soil testing laboratory shall be retained by Contractor and approved by the Contracting Officer to provide fill materials conformance and compaction testing as indicated herein.

3.5.2 Field density and moisture content shall be determined at a rate of two (2) tests per 7,000 square feet per lift for all common fill and a rate of one (1) test per 15,000 square feet per lift of installed material not specifically described above. If the density tests indicate the work does not meet specified density requirements, the Contracting Officer may require additional density tests to determine the

extent of the deficient work. Small areas shall be tested as directed by the Contracting Officer.

3.5.3 The Contactor can elect to perform a test pad demonstrating compaction methods and resulting material densities to reduce the frequency of field density testing proposed under Section 3.6.2. Additional field density and moisture contents shall be required after successful demonstration of the test pad. The frequency of the testing of the additional testing shall be proposed submitted by the Contractor for review and approval by the Contracting Officer.

END OF SECTION

SECTION 02270

EROSION CONTROL AND STORMWATER MANAGEMENT

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 Furnish all labor, materials, equipment and incidentals required and perform all installation, maintenance, removal and area cleanup related to erosion control and stormwater management as shown on the Contract Drawings and as specified herein.

1.1.2 The work shall include, but not necessarily be limited to; silt fences, straw bales, maintenance, erosion control blanket, crushed stone filters, removal of temporary measures, temporary mulching, and onsite and final cleanup.

1.2 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referenced by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1117	Evaluating Nonwoven Fabrics (latest version)
ASTM D 1388	Standard Test Method for Stiffness of Fabrics (latest version)
ASTM D 4632	Grab Breaking Load and Elongation of Geotextiles (latest version)
ASTM D 5199	Measuring Nominal Thickness of Geosynthetics (latest version)
ASTM D 5261	Measuring Mass Per Unit Area of Geotextiles (latest version)

STATE OF NEW JERSEY (NJ)

New Jersey Standards for Soil Erosion and Sediment Control (SESC), New Jersey State Soil Conservation Committee, July 1999

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 2:90	Soil Erosion and Sediment Control on Land Disturbance Activities
NJAC 7:13	Flood Hazard Area Control Act Rules

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT)

2001 Standard Specifications for Road and Bridge Construction (NJDOTSS) - Section 900 – MATERIALS

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.1 Product Literature, SD-03 Product Data; FIO

The Contractor shall provide technical product literature for all commercial products to be used for erosion and sedimentation control.

1.3.2 Permits; SD-07 Certificates; GA

The Contractor shall get approved Soil Erosion and Sediment Control Plan, certified by the Burlington County Soil Conservation District (BCSCD) and NJDEP-NJPDES RFA for Stormwater Discharge equivalency. These permits must be maintained on site at all times.

1.3.3 Erosion Control Blanket Certification; SD-07 Certificates; GA

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements for weight, thickness, stiffness, flexibility, and tensile strength shall be obtained.

1.4 QUALITY ASSURANCE

1.4.1 The Contractor will be responsible for the timely installation and maintenance of all sedimentation control measures necessary to prevent the movement of sediment from the construction site to off site areas or into waterways via surface runoff. Measures in addition to those shown on the Contract Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the Government will be considered.

1.4.2 Erosion and sedimentation control measures used shall conform to the requirements outlined in the SESC guidance document and by the BCSCD.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Silt Fence

2.1.1.1 Steel posts shall be a minimum of 4 feet in length, 2-1/2-in by 2-1/2-in by ¼-in angle post with self-fastening tabs and a 5-in by 4-in (nominal) steel anchor plate at bottom. Wooden stakes utilized for this purpose shall have a minimum diameter thickness of 1 ½-in in cross section and shall have a minimum length of 4 feet.

2.1.1.2 Welded wire fabric shall be 6-in by 6-in mesh of 14 gauges by 14 gauge steel wire.

2.1.1.3 The silt fence fabric shall be in accordance with Section 919.01 of the NJDOTSS and as specified in SECTION 02273 – GEOTEXTILE FABRIC.

2.1.1.4 Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32-in diameter soft aluminum wire.

2.1.1.5 Prefabricated commercial silt fence may be substituted for built-in-field fence.

2.1.2 Straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.

2.1.3 Latex acrylic copolymer shall be used as straw mulch tackifier.

2.1.4 Straw bales shall consist of stalks from oats, wheat, rye, barley or rice, furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor shall use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose shall have a minimum dimension of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts shall be as specified in Paragraph 2.1.1.1 above except that they shall have a minimum of 3 feet in length.

2.1.5 Erosion Control Blanket

The blanket fabric shall be COIR MAT 700 or equivalent. The erosion control blanket shall be a long-term biodegradable erosion control blanket which consists of 100% organic, high strength woven coconut grids stitched with biodegradable thread between biodegradable natural fiber top and bottom nets. At a minimum, the blanket shall contain the properties listed in TABLE 02270-1.

TABLE 02270-1
 FABRIC PROPERTIES

<u>Fabric Property</u>	<u>Test Method</u>	<u>Minimal Physical Properties</u>
Fabric Weight	ASTM D 5261	700 g/m ²
Fabric Thickness	ASTM D 5199	0.30 in
Mass per unit area (min.)	ASTM D 5261	20.6 oz/sq. yd.
Stiffness/Flexibility	ASTM D 1388	12896 x 8132 mg-cm
Water Absorption	ASTM D 1117	146%
Water Velocity	Flume Tests	12 ft/sec
Shear Stress	Flume Tests	4.6 psf
“C” Factor	Flume Tests	0.002
Open Area	Measured	50%

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Silt Fence Installation

3.1.1.1 Silt fences shall be positioned as indicated on the Contract Drawings and as necessary to prevent off site movement of soil produced by construction activities as directed by the Contracting Officer.

3.1.1.2 Dig trench approximately 6-in wide and 6-in deep along proposed fence lines.

3.1.1.3 Drive stakes, 10-ft on center (maximum) at back edge of trenches. Stakes shall be driven 2-ft (minimum) into ground.

3.1.1.4 Hang filter fabric on posts carrying to bottom of trench with about 6-in of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and secure with wire ties 2-in OC) both ways.

3.1.1.5 Backfill trench with excavated material and tamp.

3.1.1.6 Install pre-fabricated silt fence according to manufacturer's instructions.

3.1.2 Straw Bales

3.1.2.1 All straw bales shall be securely tied.

3.1.2.2 Bales shall be placed in a row with ends tightly abutting the adjacent bales.

3.1.2.3 Each bale shall be embedded in the soil a minimum of 4 inches.

3.1.2.4 Bales shall be securely anchored in place by two stakes or steel posts driven through each bale. The first stake in each bale shall be driven toward previously laid bale to force bales together.

3.2 MAINTENANCE AND INSPECTIONS

3.2.1 Inspections

A visual inspection of all erosion and sedimentation control measures once per week and promptly after every rainstorm will be made by the Contracting Officer and Contractor. If such inspection reveals that additional measures are needed to prevent movement of soil to offsite areas, the Contractor shall promptly install additional measures as needed. Erosion and sediment controls in need of maintenance shall be repaired promptly by the Contractor.

3.2.2 Maintenance

3.2.2.1 Silt Fences and Hay Bales

3.2.2.1.1 Remove accumulated soil once it builds up to 1/2 of the height of the fabric or hay bale.

3.2.2.1.2 Replace damaged fabric, or patch with a 2-ft minimum overlap. Replace damaged hay bale.

3.2.2.1.3 Make other repairs as necessary to ensure that the fence and hay bales are filtering all runoff directed to the fence.

3.3 TEMPORARY MULCHING

3.3.1 Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 days of the completion of rough grading.

3.3.2 Straw mulch shall be applied at rate of 100 lbs/1000 sq ft and tackified with latex acrylic copolymer at a rate and diluted in a ratio per manufacturer's instructions.

3.4 REMOVAL AND FINAL CLEANUP

Once the site has been fully stabilized against erosion, remove sediment control measures and all accumulated silt. Dispose of silt and waste materials in proper manner. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated on the Contract Drawings.

END OF SECTION

SECTION 02273

GEOTEXTILE FABRIC

PART 1 GENERAL

1.1 SCOPE OF WORK

Furnish all labor, materials, equipment and incidentals required and install geotextile fabric complete as shown on the Contract Drawings and as specified herein.

1.2 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referenced by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D123	Standard Terminology Relating to Textiles.
ASTM D3786	Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics – Diaphragm Bursting Strength Tester Method.
ASTM D4355	Standard Test Method for UV Resistance of Geotextiles.
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
ASTM D4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
ASTM D4751	Standard Test Method for Determining Apparent Opening Size of a Geotextile.
ASTM D4833	Standard Test Method for Index Puncture and Resistance of Geomembranes and Related Products.
ASTM D4873	Standard Guide for Identification, Storage and Handling of Geosynthetic Tolls and Samples.
ASTM D5261	Standard Test Method for Mass Per Unit Area (Weight) of Fabric.

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.1 Background Information and Company Profile; SD-03 Product Data; FIO

The manufacturer's background information and information on factory size, equipment, personnel, number of shifts per day and production capacity per shift.

1.3.2 Product Data and Samples; SD-04, SD-06, and SD-07 Samples, Test Reports, and Certificates; FIO

1.3.2.1 A list of material properties and test results and attached mill certificates or affidavit signed by a legally authorized official from the company manufacturing the geotextile no less than 7 days in advance of delivery of material to the work site, in duplicate. The mill certificate or affidavit shall attest that the geotextile meets the chemical, physical and manufacturing requirements stated in these specifications.

1.3.2.2 If requested by the Contracting Officer, the Contractor shall provide to the Contracting Officer geotextile samples for testing to determine compliance with any or all the requirements in this specification. Samples shall be submitted within 5 days of the request. All samples provided shall be from the same production lot as will be supplied for the contract and shall be the full manufactured width by at least 10 feet. Samples submitted for testing shall be identified by manufacturer's lot designation.

1.3.3 Quality Control Data; SD-03 Product Data; FIO

The manufacturer's quality control program data and manual including description of laboratory facilities.

1.3.4 Reference List; SD-03 Product Data; FIO

A list of ten completed facilities where the geotextile was used in a similar manner including:

1.3.4.1 Name and purpose of facility, its location and date of installation.

1.3.4.2 Name of project manager, design engineer and installer.

1.3.4.3 Geotextile thickness and surface area.

1.3.4.4 Information on performance of the facility.

1.3.5 Shop Drawings; SD-02 Shop Drawings; FIO

Shop drawings, including details of overlap and seaming of the geotextile, anchoring, connections and other construction details any variance or additional details that deviate from the Contract Drawings.

1.3.6 Installation Schedule; SD-03 Product Data; FIO

The geotextile installation schedule.

1.3.7 Installation Instructions; SD-08 Manufacturer's Instructions; FIO

A manual that specifically defines manufacturer's installation instructions.

1.3.8 Quality Control Certificates; SD-07 Certificates; FIO

The Contractor shall submit a copy of quality control certificates in conformance with Paragraph 2.3 herein.

1.4 QUALITY ASSURANCE

1.4.1 The quality control and quality assurance consist of conformance testing of the material delivered to the site and field quality control during installation.

1.4.2 Conformance testing requirements are included in Paragraph 2.4 herein. The purpose of conformance testing is to assure that the supplied material conforms to this Section and to the manufacturer's quality control certificates.

1.4.3 Field quality control requirements are included in Paragraph 3.3 herein. The purpose of field quality control procedures is to assure that the geotextile material has been installed in accordance with this Section and manufacturer's recommendations.

1.5 DELIVERY, STORAGE AND HANDLING

1.5.1 The geotextile shall be shipped, stored and handled in accordance with ASTM D4873 and as specified herein. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. The plastic wrapping shall be placed around the geotextile roll in the manufacturing facility and shall not be removed until deployment. Each roll shall be labeled with the manufacturer's name, geotextile type, lot number, roll number, and roll dimensions (length, width, gross weight). Geotextile or plastic wrapping damaged as a result of delivery, storage, or handling shall be repaired or replaced, as directed at no additional cost to the Contracting Officer.

1.5.2 No mechanical equipment or construction vehicles shall be driven directly on top of the geotextile. No hooks, tongs, or other sharp instruments shall be used for handling geotextile. Geotextile shall not be dragged along the ground. Any geotextile determined to be damaged as a result of poor handling shall be removed from the site and replaced, at no additional cost to the Contracting Officer, by additional geotextile meeting the requirements of this specification.

1.5.3 The geotextile shall be stored in such a way that it is protected from prolonged exposure to ultraviolet radiation and temperatures in excess 140 degrees F and shall be elevated from the ground (a minimum of 3-in) to protect the geotextile from standing water, mud, dirt, dust and debris.

1.6 MATERIAL WARRANTY

The geotextile manufacturer shall warrant the material against material degradation and manufacturing defects of the material and workmanship for a period of 20 years on a prorated basis from the date of Final Acceptance by Contracting Officer. The manufacturer shall replace, at no expense to the Contracting Officer, any defective geotextile material, including labor, within the warranty period. The manufacturer shall furnish a written warranty covering the requirements of this Section.

1.7 GUARANTEE

The Contractor shall guarantee the geotextile against defects in installation and workmanship for the period of 2 years commencing with the date of final acceptance. The guarantee shall include the services of qualified service technicians and all materials and labor required for the repairs at no expense to the Contracting Officer.

PART 2 PRODUCTS

2.1 GENERAL

The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration.

2.2 MATERIALS

2.2.1 Woven Geotextile Fabric

2.2.1.1 Woven fabric shall be Mirafi HP370, or equal, as specified in Table 02273-2 unless otherwise approved by the Contracting Officer.

TABLE 02273-2
WOVEN GEOTEXTILE FABRIC PROPERTIES

<u>Properties</u>	<u>Test Method</u>	<u>Unit</u>	<u>Min. Avg. Roll Values</u>
Apparent Opening Size	ASTM D4751	mm	0.600
Permittivity	ASTM D4491	sec ⁻¹	0.52
Strength @ Ultimate (MD)	ASTM D4595	lbs/ft	2700
Strength @ Ultimate (CMD)	ASTM D4595	lbs/ft	2700
Strength @ 2% Strain (MD)	ASTM D4595	lbs/ft	540
Strength @ 5% Strain (MD)	ASTM D4595	lbs/ft	1356
Strength @ 10% Strain (MD)	ASTM D4595	lbs/ft	2400

2.2.2 Filter fabric shall be Mirafi, Type 140N; Dupont, Type PAR, Style 3401, or equal product by Amoco and shall conform to the following requirements:

2.2.2.1 Minimum grab strength of 120 lbs per ASTM D1682.

2.2.2.2 Equivalent open size (EOS) to be equal to or greater than the U.S. Standard Sieve No. 100 (0.210 mm) per ASTM D442.

2.2.2.3 Percent open area not to exceed about 25 percent. The percent open area is defined as the ratio of the sum of 20 or more individual open areas (times 100) to the sum of the corresponding 20 or more individual total areas.

2.2.2.4 Coefficient of permeability shall not be less than 10⁻² cm/sec.

2.3 QUALITY CONTROL DOCUMENTATION

2.3.1 Prior to installation commencement of any geotextile material, provide to the Contracting Officer the following information certified by the manufacturer for the delivered geotextile.

2.3.1.1 Each roll delivered to the site shall have the following identification information:

2.3.1.1.1 Manufacturer's name

2.3.1.1.2 Product identification

2.3.1.1.3 Lot number

2.3.1.1.4 Thickness

2.3.1.1.5 Roll number

2.3.1.1.6 Roll dimensions

2.3.1.2 Quality control certificates, signed by the manufacturer's quality assurance manager. Each certificate shall have roll identification number, sampling procedures, and frequency and test results. At a minimum the following test results shall be provided for every 100,000 sq ft, or as otherwise noted, of manufactured geotextile in accordance with test requirements specified in Paragraph 2.2 herein.

2.3.1.2.1 Thickness

2.3.1.2.2 Mass per unit area

2.3.1.2.3 Trapezoid Tear Strength

2.3.1.2.4 Puncture Strength

2.3.1.2.5 Mullen Burst Strength

2.3.1.2.6 Grab Tensile Strength

2.3.1.2.7 Grab Elongation

2.3.1.2.8 Apparent Opening Size

2.3.1.2.9 UV Degradation

2.3.1.2.10 Seam Strength

2.3.1.2.11 Flow Rate

2.4 CONFORMANCE TESTING

2.4.1 At the discretion of the Contracting Officer, conformance testing may be performed by an independent laboratory in accordance with SECTION 01451 –CONTRACTOR QUALITY CONTROL. Contracting Officer shall obtain samples from the delivered material, mark the machine direction, lot number and roll identification number. Two samples shall be taken per 100,000 sq ft, or two samples per lot, whichever results in the greater number of conformance tests. This sampling frequency may be increased as deemed necessary by the Contracting Officer. The samples shall be taken across the entire roll width and shall not include the first 3-ft. The following conformance tests shall be conducted at the laboratory:

2.4.1.1 Mass per unit area (ASTM D5261)

2.4.1.2 Mullen Burst Strength (ASTM D3786)

2.4.1.3 Puncture Strength (ASTM D4833)

2.4.1.4 Grab tensile (ASTM D4632)

2.4.1.5 Water Flow Rate (ASTM D4491)

2.4.1.6 Apparent opening size (ASTM D4751)

2.4.2 These conformance tests shall be performed in accordance with the test requirements included in Paragraph 2.2 herein.

2.4.3 All conformance test results shall be reviewed by the Contracting Officer and accepted or rejected, prior to the deployment of the geotextile. All test results shall meet, or exceed, the property values listed in Paragraph 2.2 herein.

2.4.4 If samples fail, the Contracting Officer may request that other samples be tested by the laboratory with the manufacturer's technical representative present during testing procedures. This retesting shall be paid for by the Contractor. The manufacturer may obtain additional samples from rolls immediately before and after the failing roll or as directed by the Contracting Officer and have them tested by the laboratory at his/her own expense. If these rolls pass then only the failing roll will be rejected. If they fail, then the entire lot will be rejected.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 The subgrade will be inspected by the Contracting Officer prior to installation of the geotextile for conformance with SECTION 02230 – EARTHWORK AND GRADING. The surface on which the geotextile will be placed shall be prepared to a relatively smooth condition. The surface shall be free of obstructions, depressions, debris, erosion feature, or vegetation. No objects shall protrude more than 2 inches above the surface. Any irregularities shall be removed so as to insure continuous, intimate, contact of the geotextile with the entire surface. Erosion features such as rills, gullies, etc. must be graded out of the surface before geotextile placement.

3.2 INSTALLATION

3.2.1 At the time of installation, the geotextile will be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage. The prepared surfaces will require inspection and approval by the Contracting Officer prior to the placement of the geotextile.

3.2.2 Woven geotextile shall be installed below the temporary facilities (SECTION 01500 – TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES) and stabilized construction entrance and along the edges of the soil cover as shown on the Contract Drawings. The geotextile shall also be in accordance with the manufacturer's recommendations and approved shop drawings.

3.2.3 Filter fabric shall be installed as part of silt fencing in accordance with SECTION 02270 – EROSION CONTROL AND STORMWATER MANAGEMENT.

3.2.3 No mechanical equipment or construction vehicles shall be driven directly on top of the geotextile.

3.2.4 Damage (including: tears, punctures, thinly stretched sections or defects not previously identified) to the geotextile occurring during installation shall be repaired immediately in accordance with manufacturer instructions at no additional expense to the Contracting Officer. Geotextile which cannot be repaired shall be replaced.

3.2.5 All geotextile fabric installation shall be completely covered at the end of each work day unless otherwise approved by the Contracting Officer. The geotextile fabric shall be covered within 7 days of installation at a minimum.

3.2.6 The geotextile shall be cut with approved tools.

3.2.7 Geotextile fabric must be anchored.

3.2.8 The geotextile shall be protected from damage during the placement of materials primarily by limiting the height of drop of materials to no greater than 1-foot.

3.2.9 The geotextile shall be protected at all times during construction from contamination by surface runoff and any geotextile so contaminated shall be removed and replaced with uncontaminated geotextile.

3.3 FIELD QUALITY CONTROL

3.3.1 Prior to placement of the riprap, the geotextile installation and related work shall be inspected by the Contracting Officer. All work in the system therein being inspected shall be complete, clean and ready for use. All work shall meet the requirements as to line, grade, cleanliness and workmanship, as determined by the Contracting Officer.

3.3.2 All discrepancies shall be noted and repaired at no additional cost to the Contracting Officer. Final acceptance of the system shall be contingent upon the approval of the Contracting Officer.

3.4 DISPOSAL OF WASTE MATERIAL

Upon completion of installation, the Contractor shall remove and dispose in a proper manner approved by the Contracting Officer all trash, waste material and equipment used in connection with the performed work and shall leave the premises in a neat and acceptable condition.

END OF SECTION

SECTION 02276

GABION WALL

PART 1 GENERAL

1.1 SCOPE OF WORK

Furnish all equipment, materials and incidentals required to install gabion walls as shown on the Drawings and as specified herein.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Where reference is made to one of these standards, the revision in effect at the time of contract award shall apply.

ASTM INTERNATIONAL

ASTM A90	Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coating.
ASTM A185	Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
ASTM A370	Test Methods and Definitions for Mechanical Testing of Steel Products.
ASTM A641	Specification for Zinc Coated (Galvanized) Carbon Steel Wire.
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM D412	Tensile Strength Properties of Rubber and Elastomers
ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D746	Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
ASTM D792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
ASTM D2287	Standard Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds
ASTM D6711	Standard Practice for Specifying Rock to Fill Gabions, Revet Mattresses, and Gabion Mattresses.

ASTM A974 Standard Specification for Welded Wire Fabric Gabions and Gabion Mattresses
(Metallic-Coated or Polyvinyl Chloride [PVC] Coated).

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.1 Gabion Wall Design; SD-02 Shop Drawings; GA

The Contractor shall submit a gabion wall design at least 30 days prior to beginning any work on the gabion walls. The design submittal shall include shop drawings for fabrication and installation of all materials and equipment furnished related to gabion walls, gabion filler material and filter fabric.

1.4 DESIGN AND PERFORMANCE RESPONSIBILITY

1.4.1 The design of the gabion wall tree protection shall be the sole responsibility of the Contractor.

1.5 QUALITY ASSURANCE

1.5.1 If required by the Contracting Officer, the manufacturer shall provide satisfactory evidence of installations of similar structures which have been in service for a minimum of five years.

1.5.2 The quality of all materials, the process of manufacture, and the finished structure shall be subject to inspection and approval by the Contracting Officer. Such inspection may be made at the place of manufacture or after delivery, or at both places, and the materials shall be subject to rejection at any time on account of failure to meet any of the specified requirements even though samples may have been accepted as satisfactory at the place of manufacture. All materials which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted by the Contracting Officer or removed and replaced, entirely at the Contractor's expense.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 The proposed gabion basket wall design shall be approved by the Contracting Officer and shall conform, at a minimum, to the following guidelines:

2.1.1.1 Gabion walls shall be constructed as shown on plans.

2.1.1.2 Filter fabric shall be buried 6" below the finished grade for the support of the gabion wall. The filter fabric shall be in accordance with Section 02273 - GEOTEXTILE.

2.1.1.3 Gabions shall be designed to resist lateral, hydrostatic, and earth pressures causing uplift, overturning, or sliding.

2.1.1.4 Gabions shall transition to existing finished grade of the soil cover in a manner that will reduce the potential for erosion and prevent water from flowing around the structure.

2.1.2 Gabion baskets shall consist of rectangular, square or hexagonal wire mesh formed containers conforming to the following requirements:

2.1.2.1 Welded wire mesh with a uniform square, rectangular or hexagonal pattern and a resistance weld at each intersection. The welded wire connections shall conform to the requirements of ASTM A185, including wire smaller than W 1.2 (0.124-in); except that the welded connections shall have a minimum average shear of 70% and minimum shear strength of 60% of the minimum ultimate tensile strength of the wire. The wire shall be galvanized prior to weaving into mesh.

2.1.2.2 PVC (Polyvinyl Chloride) Coating Initial Requirements

2.1.2.2.1 The coating shall be green in color and have a nominal thickness of 0.0216 inches but not less than 0.015 inches in thickness. The protective PVC plastic shall be suitable to resist deleterious effects from exposure to light, immersion in salt or polluted water and shall not show any material difference in its initial properties. The PVC compound shall also be resistant to attack from acids and resistant to abrasion.

2.1.2.2.2 Specific Gravity. In the range of 1.30 to 1.34, ASTM D2287 and ASTM D792.

2.1.2.2.3 Tensile Strength. Extruded Coating not less than 2,980 psi, ASTM D412. Fusion Bonded

2.1.2.2.4 Coating not less than 2,275 psi at 100% strain, ASTM D638.

2.1.2.2.5 Abrasion Resistance. The percentage of weight loss shall be less than 12%, when tested according to ASTM D-1242, Method B at 200 cycles, CSI-A Abrader Tape, 80 Grit.

2.1.2.2.6 Brittleness Temperature. Not higher than 15°F, ASTM D746.

2.1.2.2.7 Modulus of Elasticity. Extruded Coating not less than 2,700 at 100% strain, ASTM D412.

2.1.2.2.8 Fusion Bonded Coating not less than 1,980 psi at 100% strain, ASTM D638.

2.1.2.2.9 Ultraviolet Light Exposure. A test period of not less than 3,000 hours, using apparatus Type E at 63°C.

2.1.2.2.10 Salt Spray Test. A test period of not less than 3,000 hours, ASTM B117.

2.1.2.3 Gabion baskets shall have a mesh opening of approximately 9 square inches. Gabion mattresses shall have a mesh opening of approximately 4.5 square inches. Mesh opening shall be considered to be center-to-center distance between two consecutive longitudinal or transverse wires. The maximum permissible tolerance is plus or minus 1/8 inches.

2.1.2.4 Standard gabion basket dimensions shall be 6' x 3' x 3' (length-width-height).

2.1.2.5 All gabion dimensions shall be within a tolerance limit of plus or minus 5 percent of the manufacturer's stated sizes. The wire mesh shall have deformability sufficient to permit a minimum mesh elongation equivalent to 10 percent of the unstretched length of the mesh test section without reducing the gauge or tensile strength of the individual wire strands to values less than those for similar wire, one gauge smaller in diameter.

2.1.2.6 Gabions shall be fabricated, assembled and installed in accordance with the nominal wire sizes and dimensions found in Table 1 using the following materials. Wire for fabrication and assembly shall be hot-dipped galvanized. The wire shall have a minimum tensile strength of 60,000 psi. Galvanized steel wire shall conform to ASTM A641, Class 3, and Soft Temper.

Table 1
Gabion Wire Sizes

Type of Wire	Mesh Size (Inches)	Wire Diameter (Inches)	Galvanized Coating (oz/sf)
Lacing Wire		0.086	0.70
Welded	3 x 3	0.118	0.80
Mesh	3 x 3	0.105	0.80
Spiral Binder		0.105	0.80

2.1.2.7 Alternate fasteners, other than spiral binders, for use with wire mesh gabions, such as ring fasteners, shall be formed from wire meeting the same quality thickness requirements as specified in Table 1. Test results must be provided to certify that the ring fasteners provide the joint strength required.

2.1.2.8 Standard fasteners and alternate fasteners must provide a minimum strength of 1,400 lbs per linear foot for gabion baskets. When used to interconnect gabion baskets, ring fasteners shall be made of stainless steel and spiral fasteners shall be PVC coated. All fasteners shall meet the closing requirements of the gabion manufacturer.

2.1.3 Gabion filler material shall be dumped riprap. The rock shall be hard, durable, angular in shape and resistant to weathering and water action. While no specific gradation is required, the various sizes of the rock shall be equally distributed within the required size range. The size of an individual stone particle will be determined by measuring its long dimension. The rock shall have a minimum size of 5 inches, midrange size of 8 inches, and maximum size of 12 inches. Thin slab stone or shale and stone with shale seams are not acceptable. Sand, gravel, asphalt, broken concrete fragments, soil or other materials not classified as rock will not be acceptable as gabion filler material.

2.1.4 Geotextile filter fabric shall be suitable for filtration and prevention of leaching of subsoils. The filter fabric shall be a 10 oz/yd² non-woven fabric as specified in Section 02230. The fabric shall be furnished in rolls and shall be free of defects or flaws which significantly affect its physical and/or filtering properties. During shipment and storage, the fabric rolls shall be wrapped, shaded from direct sunlight and shall not be exposed to extreme heat or cold. The fabric sheets may be sewn together with a thread consisting of the same material as the fabric either at point of manufacturer or at the job site, at the Contractor's option, to form sections of the required size. All edges of the woven fabric shall be salvaged to prevent raveling.

PART 3 EXECUTION

3.1 FOUNDATION PREPARATION

3.1.1 The foundation on which the gabions are to be placed shall be cut and graded to 1 foot below existing grade. Surface irregularities, loose material, vegetation, and all foreign matter shall be removed from the foundation area. Excavation, backfilling, and compaction shall be in accordance with Section 02230. Gabions and bedding or specified filter fabrics shall not be placed until the foundation preparation is completed, and the subgrade surfaces have been inspected and approved by the Contracting Officer.

3.1.2 Filter fabric shall be placed against the subgrade prior to placement of the gabions. Filter fabric sections shall be overlapped a minimum of 2 feet.

3.2 ASSEMBLY AND PLACEMENT

3.2.2 Assembly

3.2.2.1 Rotate the gabion panels into position and join the vertical edges with fasteners for gabion assembly. Where lacing wire is used, wrap the wire with alternating single and double half hitches at intervals between 4 to 5 inches. Where spiral fasteners are used, crimp the ends to secure the spirals in place. Where ring type alternate fasteners are used for basket assembly, install the fasteners at a maximum spacing of 6 inches. Use the same fastening procedures to install interior diaphragms where they are required.

3.2.2.2 Interior diaphragms will be required where any inside dimension exceeds 3 feet for gabion baskets thicker than 12 inches. Diaphragms will be installed to assure that no open intervals are present that exceeds 3 feet. For baskets 12 inches or less rectangular cells are allowed with dimensions 36 inches in one direction and not to exceed 72 inches in the perpendicular direction.

3.2.3 Placement

3.2.3.1 Place the empty gabion units on the foundation and interconnect the adjacent gabions along the top, bottom, and vertical edges using lacing wire or spirals. Wrap the wire with alternating single and double half hitches at intervals between 4 to 6 inches. Spiral fasteners are commonly used for the assembly and interconnection of welded mesh gabions. Spirals are screwed down at the connecting edges then each end of the spiral is crimped to secure it in place. Lacing may be used as needed to supplement the interconnection of welded mesh gabions, and the closing of lids.

3.2.3.2 Interconnect each layer of gabions to the underlying layer of gabions along the front, back, and sides. Stagger the vertical joints between the gabions of adjacent rows and layers by at least one-half of a cell length. Gabions shall be stacked in a manner to resist lateral earth stresses.

3.3 FILLING OPERATION

3.3.1 After adjacent empty wire gabion units are set to line and grade and common sides properly stated, they shall be placed in straight-line tension to gain a uniform alignment. Staking of the gabions may be required to maintain the established proper alignment prior to the placement of rock. No temporary stakes shall be placed through filter fabric. Connecting lacing wire and other fasteners (as allowed) shall be attached during the filling operation to preserve the strength and shape of the structure.

3.3.2 Internal connecting crosstie wires shall be placed in each unrestrained gabion cell greater than 18 inches in height, including gabion cells left temporarily unrestrained. Two internal connecting wires shall be placed concurrently with rock placement, at each 12-inch interval of depth.

3.3.3 In welded mesh gabions these crossties or stiffeners will be placed across the corners of the gabions (at 12 inches from the corners) providing diagonal bracing. Lacing wire or preformed wire stiffeners may be used.

3.3.4 The gabions shall be carefully filled with rock, either by machine or hand methods, ensuring alignment, avoiding bulges, and providing a compact mass that minimizes voids. At no point in the filling process may rock be mechanically placed from a height of over 36" from machine to fill area. Machine placement will require supplementing with handwork to ensure the desired results. The cells in any row shall be filled in stages so that the depth of rock placed in any one cell does not exceed the depth of rock in any adjoining cell by more than 12 inches. Along the exposed faces, the outer layer of stone shall be carefully placed and arranged by hand to ensure a neat, compact placement with a uniform appearance.

3.3.5 The last layer of rock shall be uniformly leveled to the top edges of the gabions. Lids shall be placed over the rock filling using only approved lid closing tools as necessary. The use of crowbars or other single point leverage bars for lid closing is prohibited due to the potential for damage to the baskets.

3.3.6 The gabion lid shall then be secured to the sides, ends, and diaphragms with spiral binders, approved alternate fasteners, or lacing wire wrapped with alternating single and double half-hitches in the mesh openings.

3.3.7 All damage to the wire or coatings during assembly, placement and filling shall be repaired promptly in accordance with the manufacturer's recommendations or replaced with undamaged gabion baskets.

3.4 CLEANUP

3.4.1 Remove and dispose of all surplus materials and debris resulting from installation of the gabions.

END OF SECTION

SECTION 02575

BITUMINOUS CONCRETE PAVEMENT

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 Furnish all labor, material, equipment and incidentals required to construct new paved walkway areas, including subgrade, subbase, base course and surface course as shown on the Drawings and as specified herein.

1.1.2 Roadways, curbs, parking areas and/or sidewalk pavements within the work site area, damaged or disturbed by the Contractor's operations shall be repaired, replaced or restored in accordance with the requirements specified herein and as directed for the respective type of pavement replacement and in a manner satisfactory to the Contracting Officer.

1.2 REFERENCE STANDARDS

Except as otherwise specified herein, the material and construction shall be in accordance with the State of New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, 2001 Edition including all addenda (NJDOTSS).

1.3.1 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.2 Samples; SD-04 Samples; GA

Provide samples of materials for laboratory testing and job-mix design.

1.3.3 Certified Mix Designs; SD 05 Design Data; GA

Submit certified mix designs for pavement, subbase, binder and surface course.

1.3.4 Test Results; SD-06 Test Reports; GA

Submit certified test results for gravel gradation.

1.4 PRODUCT HANDLING

1.4.1 Use all means necessary to protect bituminous concrete pavement materials before, during and after installation and to protect the installed work and materials of all other trades.

1.4.2 In the event of damage, immediately make all repairs and replacements necessary to the approval of the Contracting Officer.

PART 2 PRODUCTS

2.1 PAVEMENTS

2.1.1 Coarse aggregate shall be sound; angular aggregate; crushed gravel; or properly cured, crushed blast furnace slag; complying with ASTM D 692, and NJDOTSS Sections 901.03 and 901.10.

2.1.2 Fine aggregate shall be sharp-edged natural sand or sand prepared from stone; gravel, properly cured blast-furnace slag, or combinations thereof; complying with ASTM D 1073 and NJDOTSS Sections 901.04 and 901.01.

2.1.3 Mineral Filler shall be rock or slag dust, hydraulic cement, or other inert material complying with ASTM D 242, and NJDOTSS Section 901.15.

2.1.4 Asphalt cement shall conform to ASDM D 3381 for viscosity-graded material; ASTM D 946 for penetration-graded material, and NJDOTSS Section 904.01.

2.1.5 Prime Coat shall conform to ASTM D 2027; medium-curing cutback asphalt; MC-30, MC-70, or MC-250, and NJDOTSS Section 904.02, Asphalt emulsion prime conforming to NJDOTSS Section 904.03.

2.1.6 Tack Coat shall conform to ASTM D 977, emulsified asphalt or ASTM D 2397, cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application conforming to NJDOTSS Section 904.04.

2.1.7 Hot Mix Asphalt (HMA) shall be in accordance with NJDOTSS Section 902.02

1. Paved Pathways

- a. 1-1/2-in. HMA 12.5H76 Surface Course
- b. 2-in. HMA 19H76 Intermediate Course

2.2 AGGREGATE BASE COURSE

2.2.1 Aggregate base course shall be constructed to the thickness shown on the Drawings. Subbase course shall be dense graded aggregate of natural or prepared mixtures consisting predominantly of hard durable particles or fragments of stone, slag, gravel or sand and containing some stone dust. The subbase course shall conform to Subsection 901.03 and 9.01.05 of the NJDOTSS. Dense graded aggregate shall be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2-in	100
3/4-in	55 - 90
No. 4	25 - 60
No. 50	5 - 25
No. 200	3 - 12

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Materials for bituminous concrete pavement shall be mixed, delivered, placed and compacted in accordance with Section 401 of the NJDOTSS.

3.1.2 All paving mixtures shall be spread by a mechanical paver approved by the Contracting Officer. Paver shall be equipped with blending or joint leveling devices for smoothing and adjusting longitudinal joints between adjacent strips or courses of the same thickness. The Contractor shall schedule his operations to cover full width of the paved surface at completion of each day's work.

3.1.3 When the air temperature falls below 50 degrees F, extra precautions shall be taken in drying the aggregates, controlling the temperature of the materials and placing and compacting the mixtures. The weather limitations imposed by the NJDOTSS shall apply for the placement of all bituminous concrete mixtures.

3.1.4 No mixture shall be placed when the air temperature is below 40 degrees F, or when the material on which the mixtures are to be placed contains frost or has a surface temperature the Contracting Officer considers too low.

3.2 JOINTS

3.2.1 Joints between old and new pavements, or between successive sections or lanes, shall be carefully made to insure a proper bond for the full depth of the course. Joints shall be formed by cutting back the previous section to expose the full depth of the course. A tack coat shall be applied at all joints.

3.2.2 Joints adjacent to curbs, gutters or adjoining pavement shall be formed by carrying back sufficient hot material to fill any space left uncovered by the paver. The joint shall then be set up with rakes to a sufficient height to receive full compression under the rollers

3.3 ROLLING AND COMPACTION

3.3.1 Compaction shall be started immediately after spreading. Rollers shall be types approved by the Contracting Officer. Rolling shall be a continuous process, and all parts of the pavement shall receive uniform compaction.

3.3.2 All pavement thicknesses referred to herein are compacted thicknesses. The Contractor shall place sufficient mix to ensure that the specified thickness of pavement occurs wherever called for.

3.3.3 After the paving mixture has been properly spread, initial compaction shall be obtained by use of power rollers weighting not less than 240-lbs per inch width of tread.

3.3.4 Final compaction of the surface shall be accomplished by rollers weighting not less than 285-lbs per inch width of tread. Along curbs, structures and all places not accessible with a roller, the mixture shall be thoroughly compacted with tampers. Such tampers shall not weight less than 25-lbs and shall

have a tamping face of not more than 50 square inches. The surface of the mixture after compaction shall be smooth and true to established line and grade.

3.3.5 No vehicular traffic or loads shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines. If the climatic or other conditions warrant it, the period of time before opening to vehicular traffic may be extended at the discretion of the Contracting Officer.

3.4 PAVEMENT INSTALLATION

3.4.1 Subgrade

3.4.1.1 The Contractor shall perform all general unclassified excavation, rough or overall grading, borrow and fill to the subgrades of the pavement and slopes to match to existing grades.

3.4.1.2 Finished excavation and grading shall be uniformly smooth, well compacted, and free from irregular surface changes. The degree of finish shall be that obtainable from either blade-grader or scraper operations. The finished surface shall not be more than 0.10 ft above or below the new grade.

3.4.1.2 The Contractor shall compact the subgrade material at optimum moisture content to a density of not less than 95 percent as compared with the density of the same material when tested in accordance with AASHTO T 99. The subgrade shall then be shaped as shown on the Drawings. If for any reason the subgrade becomes eroded or distorted prior to the placing of material for subsequent courses, it shall be scarified, reshaped and recompacted.

3.4.1.3 When in the opinion of the Contracting Officer, the existing subgrade material is not suitable for foundation purposes, the Contractor will be required to excavate the entire roadbed below grade shown on the profile as directed by the Contracting Officer and then backfilled with the specified subgrade material.

3.4.2 Subbase

3.4.2.1 Subbase course shall be constructed in accordance with Section 301 of the New Jersey Department of Transportation Standard Specifications.

3.4.2.2 Subbase course shall not be dumped in piles but shall be spread over sub-base or subgrade in layers not to exceed 4-in in compacted thickness. Water content shall be maintained during compaction procedure to obtain through the full depth at least 100 percent of maximum density obtained in the laboratory. Density in the field shall be measured in accordance with AASHTO T 147. Density measurements in the laboratory shall be determined in accordance with AASHTO T 180. The base course shall be maintained in a condition that will meet all specification requirements until the completed work is accepted.

3.4.3 Bituminous Concrete Surface Course

3.4.3.1 Bituminous concrete pavements shall consist of the specified type constructed in two or more courses upon an approved base course, and shall conform to the lines, grades and typical section shown on the Drawings.

3.4.3.2 Bituminous paving mixes shall be laid only on bases that are dry and when weather conditions are satisfactory. Base course shall be cleaned of all loose and foreign materials, primed and the contact surfaces of all the curbing, gutters and other structures abutting the pavement uniformly coated with a thin film of bitumen prior to spreading any paving mixture.

3.4.3.3 A prime or tack coat of bituminous material shall be applied between the base and the bituminous paving mixture and between courses of bituminous paving mixture.

3.4.3.4 The base course shall be placed as soon as possible after the subbase has been prepared, shaped and compacted. Base course shall be placed and compacted by steel-wheeled rollers of sufficient weight to thoroughly compact the bituminous concrete. Where necessary, the pavement shall be rolled smooth and even with the existing pavement.

3.4.3.5 The surface course shall be finish smooth, dense and flush with surface of existing pavement and shall drain away from pavement center.

3.4.3.6 All depressions in excess of 2-in shall be removed in advance of the surface course. Straight edges, crown-broads, chalk lines and other devices shall be employed to locate depressions, create positive drainage and secure the proper cross section and desired riding qualities.

3.4.3.7 The surface shall be protected until the material has cooled sufficiently to carry normal traffic without marring.

3.4.3.8 The entire area of the work site shall be raked clean of trash, wood forms and debris after completion of the work under this Contract. Spoil or stockpiles shall be leveled and excess material disposed of.

3.4.3.9 The Contractor shall maintain pavement under this Contract during the guarantee period of one year and shall promptly (within 3 days of notice given by Contracting Officer) refill and repave areas which have settled or are otherwise unsatisfactory for traffic.

3.4.3.10 When required, remove existing pavement by saw, pneumatic hammer or wheel, cutting edges of trenches to be repaved as directed by the Contracting Officer. After pipe laying, backfilling and compaction operations are completed satisfactorily and after the subbase is shaped and compacted, place the type of pavement as directed by the Contracting Officer, or as specified herein.

3.4.3.11 Hose clean all road surfaces after backfilling and before any surfacing, but in no case shall pavement be placed until the base is dry and compacted to at least 95 percent maximum density at optimum moisture content.

3.4.3.12 All manhole and catch basin frames and utility boxes are to be set to the grade of the wearing course. At no time shall the frames be allowed to protrude above the surface of the wearing course.

3.4.3.13 The contact surfaces of castings and other structures shall be painted with a tack coat.

3.4.4 Temporary Pavement

3.4.4.1 Temporary pavement shall be placed wherever existing pavement has been removed or disturbed as soon as practical after backfilling is completed.

3.4.4.2 The temporary pavement shall be placed and compacted by steel-wheeled rollers of sufficient weight to thoroughly compact the bituminous concrete without damaging the existing pavement. The new pavement shall be rolled smooth and even with the existing pavement.

3.4.4.3 Temporary pavement shall be maintained in a condition suitable for traffic until replaced by permanent pavement. Defects shall be repaired within 3 days of notification of such defects.

END OF SECTION

SECTION 02605

PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.1 SCOPE OF WORK

Furnish all labor, materials, equipment, and incidentals required to install precast concrete manholes, frames and covers, manhole rungs, brickwork, dampproofing and appurtenances all as shown on the Drawings and as specified herein.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where reference is made to one of the standards below, the revision in effect at the time of contract award shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A48	Standard Specification for Gray Iron Castings
ASTM A615	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C32	Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C62	Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
ASTM C150	Standard Specification for Portland Cement
ASTM C207	Standard Specification for Hydrated Lime for Masonry Purposes
ASTM C443	Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
ASTM C478	Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C990	Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections using Preformed Flexible Joint Sealant.
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box for Culverts, Storms Drains and Sewers.

ASTM D4101 Standard Specification for Propylene Plastic Injection and Extrusion Materials

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 318 Building Code Requirements for Reinforced Concrete

ACI 350R Environmental Engineering Concrete Structures

NEW JERSEY DEPARTMENT OF TRANSPORTATION

NJDOT New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

Standard Specifications for Highway Bridges

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

1.2.1 Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.3 SUBMITTALS

1.3.1 Drawings; SD-02 Shop Drawings; GA

Submit shop drawings as provided in SECTION 01330 – SUBMITTAL PROCEDURES, showing details of construction, reinforcing, joints, pipe connection to manhole, manhole rungs, manhole frames and covers.

1.3.1.1 Base sections, riser sections, eccentric and concentric conical top sections with notarized certificate indicating compliance with ASTM C478.

1.3.1.2 Pipe connection to manhole.

1.3.1.3 Manhole rungs or ladders, including method of installation and notarized certificate indicating compliance with pull-out resistance test specified herein.

1.3.1.4 Manhole frame and cover with notarized certificate indicating compliance with ASTM A48, Class 30.

1.3.1.5 Method of repair for minor damage to precast concrete sections.

1.3.2 Schedule of Section Lengths; SD-02 Shop Drawings; GA

Prior to fabrication of the manhole sections, submit for approval, with shop drawings, a schedule of section lengths for this project. All precast sections furnished under this Contract shall be fabricated in full accordance with the approved shop drawings.

1.3.3 Professional Engineer Certification; SD-07 Certificates; FIO
Submit P.E. Certification form as appended to SECTION 01330 – SUBMITTAL PROCEDURES to indicate compliance with the requirements herein.

1.4 QUALITY ASSURANCE

1.4.1 The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Contracting Officer. Such inspection may be made at the place of manufacture, or on the work after delivery, or at both places, and the materials shall be subject to rejection at any time on account of failure to meet any of the Specification requirements; even though samples may have been accepted as satisfactory at the place of manufacture. Material rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. All materials which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.

1.4.2 At the time of inspection, the materials will be carefully examined for compliance with the ASTM designation specified below and these Specifications, and with the approved manufacturer's drawings. All manholes shall be inspected for general appearance, dimension, "scratch-strength", blisters, cracks, roughness, soundness, etc. The surface shall be dense and close-textured.

1.4.3 Imperfections in manholes may be repaired, subject to the approval of the Contracting Officer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at 7 days and 5,000 psi at 28 days, when tested in 3-in by 6-in cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Contracting Officer.

PART 2 PRODUCTS

2.1 GENERAL

2.1.1 Reference to a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

2.1.2 Like items of materials/equipment shall be the end products of one manufacturer in order to provide standardization for appearance, operation, maintenance, spare parts and manufacturer's service.

2.1.3 Provide lifting lugs or holes in each precast section for proper handling.

2.1.4 Cement shall conform to ASTM C150, Type II cement or equal.

2.1.5 Precast concrete sections shall be properly cured prior to shipping. Precast concrete sections shall not be shipped before concrete has attained 3,000 psi compressive strength.

2.1.6 Mark date of manufacture, name and trademark of manufacturer on the inside of each precast section.

2.2 PRECAST CONCRETE MANHOLES

2.2.1 Precast concrete barrel sections and transition top sections, shall conform to Specifications for Precast Reinforced Concrete manhole and drain sections, ASTM C478 and meet the following requirements:

2.2.1.1 The wall thickness shall not be less than 6-in for 60-in diameter reinforced barrel sections.

2.2.1.2 Top sections of manholes shall be eccentric except that barrel sections shall be used where shallow pipe cover requires a top section less than 4 feet as shown on the Drawings.

2.2.1.3 Barrel sections shall have tongue and groove joints.

2.2.1.4 All sections shall be cured by an approved method and shall not be shipped nor subjected to loading until the concrete compressive strength has attained 4,000 psi and not before 5 days after fabrication and/or repair, whichever is longer.

2.2.1.5 Design precast concrete top slabs, base, risers and transition sections for a minimum of H-20 loading plus the weight of the soil above at 120 pcf.

2.2.1.6 The date of manufacture and the name and trademark of the manufacturer shall be clearly marked on the inside of each precast section.

2.2.1.7 Precast concrete bases shall be constructed and installed as shown on the Drawings. The thickness of the bottom slab of the precast bases shall not be less than the manhole barrel sections or top slab whichever is greater.

2.2.1.8 Knock out panels shall be provided in precast manhole sections at the locations shown on the Drawings. They shall be integrally cast with the section, 2-1/2-in thick and shall be sized as shown on the Drawings. There shall be no steel reinforcing in knock out panels.

2.3 BRICK MASONRY

2.3.1 The bricks shall be good, sound, hard and uniformly burned, regular and uniform in shape and size, of compact texture and satisfactory to the Contracting Officer. Underburned or salmon brick will not be acceptable and only whole brick shall be used unless otherwise permitted. In case bricks are rejected by the Contracting Officer, they shall be immediately removed from the site of the work and satisfactory bricks substituted therefor.

2.3.1.1 Bricks for building up and leveling manhole frames shall conform to ASTM C62.

2.3.2 Mortar used in the brickwork shall be composed of one part Type II portland cement conforming to ASTM C150 to two parts sand to which a small amount of hydrated lime not to exceed 10 lbs to each bag of cement shall be added. The hydrated lime shall also conform to ASTM C207.

2.3.3 Sand shall be washed, cleaned, screened, sharp and well graded as to different sizes and with no grain larger than will pass a No. 4 sieve. It shall be free from vegetable matter, loam, organic or other materials of such nature or of such quantity as to render it unsatisfactory.

2.3.4 The hydrated lime shall also conform to ASTM C207.

2.4 MANHOLE FRAMES AND COVERS

2.4.1 Manhole frames and covers shall be of good quality, strong, tough, even grained cast iron smooth, free from scale, lumps, blisters, sand holes and defects of any kind which render them unfit for the service for which they are intended. Manhole covers and frame seats shall be machined to a true surface. Castings shall be thoroughly cleaned and subject to hammer inspection. Cast iron shall conform to ASTM A48, Class 30.

2.4.2 Manhole covers shall have a 30-in. clear opening and a diamond pattern, blind pick holes.

2.4.3 Manhole covers shall have a diamond pattern, pickholes and the word "DRAIN" cast in 3-inch letters as appropriate. Manhole frame and covers shall be East Jordan Iron Works, Neenah Foundry or approved equal. The following model numbers refer to E.L. LeBaron products:

2.4.3.1 Manhole Covers

2.4.3.1.1 Manhole frames and covers shall be East Jordan Iron Works (formerly E.L. LeBaron Foundry Co.) Model No. LC248, or equal.

2.5 JOINTING PRECAST MANHOLES

2.5.1 Tongue and groove joints of precast manhole sections shall be sealed with either a round rubber profile gasket or a preformed flexible joint sealant. The profile gasket shall conform to ASTM C443. The preformed flexible joint sealant shall be Kent Seal No. 2 by Hamilton-Kent; Ram-Nek by Henry Co., or equal.

2.5.2 Joints shall be designed and manufactured so that the completed joint will withstand an internal water pressure of 15 psi without leakage or displacement of the gasket or sealant.

2.6 MANHOLE RUNGS

2.6.1 Manhole rungs shall be the following type:

2.6.1.1 Manhole rungs shall be steel reinforced, copolymer polypropylene plastic. Rungs shall be 14-in wide, M.A. Industries Inc, Type PS2-PF-SL or equal. Copolymer polypropylene shall conform to ASTM D4101 Classification PP0344 B33534 Z02. Steel reinforcing shall be 1/2-in diameter, conforming to ASTM A615, Grade 60 and shall be continuous throughout rung. The portion of the legs to be embedded in the precast section shall have fins and be tapered to insure a secure bond..

2.7 PIPE CONNECTIONS

2.7.1 Manhole pipe connections may be accomplished in the following ways:

2.7.1.1 Flexible sleeve - Integrally cast sleeve in precast manhole or vault section or install sleeve in a formed or cored opening. Fasten pipe in sleeve with stainless steel clamp(s). Coat stainless steel

clamp(s) with bituminous material to protect from corrosion. Flexible sleeve shall be Lock Joint Flexible Manhole Sleeve; Kor-N-Seal connector; PRX Press-Seal Gasket or equal.

2.7.1.2 Compression gasket - Integrally cast compression gasket in precast manhole section. Insert pipe into compression gasket. Compression gasket shall be A-Lok or equal.

2.7.1.3 At the discretion of the Contracting Officer the following procedure may be allowed: Grout in place - Precast manhole section shall have a formed, tapered circular opening larger than the pipe outside diameter. Grout shall be non-shrink and waterproof equal to Hallemite, Waterplug or Embeco. Plastic pipe shall have a waterstop gasket secured to pipe with a stainless steel clamp prior to grouting.

2.8 DAMPPROOFING

2.7.1 Brushed dampproofing shall be an asphalt emulsion reinforced with fibers conforming to ASTM D1227, Type II, Class 1. The dampproofing shall be Hydrocide 700B by Sonneborn Building Products, Division of ChemRex Inc., Minneapolis, MN; Karnak 220 Asphalt Emulsion by Karnak Corporation, Clark, NJ or equal.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Manhole Installation

3.1.1.1 Manholes shall be constructed to the dimensions shown on the Drawings and as specified in these Specifications. All work shall be protected against flooding and flotation.

3.1.1.2 The bases of manholes shall be placed on a bed of 12-in screened gravel as shown on the Drawings. The bases shall be set at a grade to assure that a maximum of 12-in thickness of brickwork will bring the manhole frame and cover to final grade. Cast-in-place bases, where permitted by Contracting Officer, shall be constructed in accordance with the details shown on the Drawings and the requirements of Division 3. The 28-day compressive strength of concrete shall not be less than 5000 psi.

3.1.1.3 Precast concrete barrel sections shall be set plumb and with sections in true alignment with a 1/4-in maximum tolerance to be allowed. The joints of precast barrel sections shall be sealed with either a round rubber profile gasket or the preformed flexible joint sealant used in sufficient quantity to fill 75% of the joint cavity. The outside and inside joint shall be filled with non-shrink mortar and finished flush with the adjoining surfaces. Allow joints to set for 24-hours before backfilling. Backfilling shall be done in a careful manner, bringing the fill up evenly on all sides. If any leaks appear in the manholes, the inside joints shall be caulked with lead wool to the satisfaction of the Contracting Officer. The Contractor shall install the precast sections in a manner that will result in a watertight joint.

3.1.1.4 Holes in the concrete barrel sections required for handling or other purposes shall be plugged with a non-shrinking grout or in combination with concrete plugs, and finished flush on the inside.

3.1.1.5 Where holes must be cut in the precast sections to accommodate pipes, cutting shall be done prior to setting manhole and drain sections in place to prevent any subsequent jarring which may loosen the mortar joints.

3.1.2 Manhole Pipe Connections

3.1.2.1 Pipe connections shall be accomplished in the ways specified hereinbefore. Pipe stubs for future extensions shall also be connected and the stub end closed by a suitable watertight plug.

3.1.3 Manhole Rung Installation

3.1.3.1 Steel reinforced polypropylene plastic manhole rungs shall be driven into tapered holes in the precast riser and cone sections during the manufacture of the sections. Holes for rungs shall be preformed during the casting of the sections and shall not be drilled out after casting. The preformed holes shall be a minimum of 3-1/2-in deep and shall taper from 1-1/8-in to 1-3/8-in diameter.

3.1.4 Brickwork

3.1.4.1 Mortar shall be mixed only in such quantity as may be required for immediate use and shall be used before the initial set has taken place. Mortar shall not be retained for more than one and one-half hours and shall be constantly worked over with hoe or shovel until used. Anti-freeze mixtures will not be allowed in the mortar. No masonry shall be laid when the outside temperature is below 40 F unless provisions are made to protect the mortar, bricks, and finished work from frost by heating and enclosing the work with tarpaulins or other suitable material. The Contracting Officer's decision as to the adequacy of protection against freezing shall be final.

3.1.4.2 Setting Manhole Frame and Cover. Manhole covers and frames shall be set in a full mortar bed, and bricks, a minimum of 6-in and a maximum of 12-in thick, shall be utilized to assure frame and cover are set to the existing grade. If full-width paving is the permanent paving, the manhole frame and cover shall be reset to final grade prior to placement of permanent paving.

3.1.4 Dampproofing

3.1.4.1 Outer surfaces of precast manholes shall be given two coats of bituminous dampproofing at the rate of 30-60 sq ft per gallon as directed by the Contracting Officer and in accordance with manufacturer's instructions.

3.2 LEAKAGE TESTS

3.2.1 Leakage Tests for Manholes

3.2.1.1 The Contracting Officer will visually inspect manholes for possible leaks before backfilling is allowed. All joints shall be sealed to the satisfaction of the Contracting Officer.

3.3 CLEANING

3.3.1 All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

END OF SECTION

SECTION 02623

CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) DRAINAGE PIPE

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 Furnish all labor, materials, equipment and incidentals required to install the corrugated HDPE pipe, flared end, and appurtenances as shown on the Drawings and as specified herein.

1.2 REFERENCES

1.2.1 The publications listed below form a part of the specification to the extent referenced. The publications are referenced by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M-294 Standard Specification for Corrugated Polyethylene Pipe (12 to 36-in)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Application (latest edition)

ASTM F2648 Standard Specification for 2 to 60 inch Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications (latest edition)

ASTM F477 Standard Specification for elastomeric seals (gaskets) for joining plastic pipe (latest edition)

ASTM F 2306 Standard Specification for 12 to 60-inch Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications (latest edition)

1.2.2 HDPE pipe manufacturers' installation guidelines.

1.3 SUBMITTALS

1.3.1 Drawings; SD-02 Shop Drawings; GA
Submit, in accordance with Section 01330, shop drawings showing details of pipe, fittings, joints and construction methods.

1.4 QUALIFICATIONS

1.4.1 The high density polyethylene pipe shall be furnished by a manufacturer who is fully experienced, reputable, and qualified in the manufacture of the polyethylene pipe. The pipe shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with this Section.

PART 2 PRODUCTS

2.1 CORRUGATED HDPE PIPE AND FLARED END SECTIONS

2.1.1 Corrugated HDPE pipe shall have an annular corrugated exterior, smooth inner wall and built-in bell and spigot joints.

2.1.2 Corrugated HDPE pipe, flared end sections, and appurtenances shall be high density polyethylene of the size and type as shown on the Drawings, all manufactured by the same company and shall meet or exceed the following specifications: AASHTO M-294, ASTM F2648, and ASTM F2306. .

2.1.3 Backfilling over the pipe shall be to the pipe manufacturer's specifications. Cover shall be compacted to at least 92 percent of its maximum dry density as determined by ASTM Test D1557, Method D.

2.2 PIPE JOINTS

2.2.1 All joints shall meet the requirements of a soil-tight joint meeting the requirements of F477. Soil-tight bell and spigot joints will utilize an elastomeric rubber gasket that shall meet ASTM F2648.

2.3 PIPE FITTINGS

2.3.1 Pipe fittings shall conform to ASTM F2306. Bell and spigot shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight performance requirements of ASTM F2306

PART 3 EXECUTION

3.1 INSTALLATION OF HDPE DRAINS AND FLARED END SECTION

3.1.1 All pipe shall be thoroughly examined before laying and no piece shall be installed which is found to be defective.

3.1.2 If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner. All pipe and fittings shall be thoroughly cleaned before installation, shall be kept clean until used in the work and when laid, shall conform to the lines and grades required. HDPE pipe, flared end sections, and fittings shall be installed in accordance with requirements of the manufacturer, or as otherwise provided herein or on the Drawings.

3.1.3 As soon as the excavation is complete to normal grade of the bottom of the trench, granular material bedding shall be placed and graded to provide continuous support for the pipe. The pipe shall

be laid accurately to the lines and grades indicated on the Drawings. Blocking under the pipe will not be permitted. Bedding shall be placed evenly on each side of the pipe to mid-diameter and hand tools shall be used to force the bedding where needed to give firm continuous support for the pipe. Screened gravel shall then be placed to min. 6-in above the top of the pipe. The initial 3-ft of backfill above the bedding shall be placed in 1-ft layers and carefully compacted. Generally, the compaction shall be done evenly on each side of the pipe and compaction equipment shall not be operated directly over the pipe until sufficient backfill has been placed to ensure that such compaction equipment will not have a damaging effect on the pipe. Equipment used in compacting the initial 3-ft of backfill shall be approved by the pipe manufacturer's representative prior to use.

3.1.4 All piping shall be sound and clean before installation. When installation is not in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other approved means. Good alignment shall be preserved during installation. The deflection at joints shall not exceed that recommended by manufacturer.

3.1.5 Any pipe having defective joint surfaces shall be rejected, marked as such and immediately removed from the job site.

3.1.6 Before any joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to grade by striking it.

3.1.7 Precautions shall be taken to prevent flotation of the pipe in the trench.

3.1.8 When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the backfill. Trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below top of the pipe. If trench boxes, moveable sheeting, shoring or plates have been installed below the top of the pipe, they shall be moved slowly taking care not to disturb pipe, bedding or backfill. As trench boxes, moveable sheeting, shoring or plates are moved, pipe backfill shall be placed to fill any voids created and the backfill shall be recompacted to provide uniform side support for the pipe.

3.1.9 Pipe outlet ends shall be installed within HDPE flared end sections. The joint between the differing pipe materials shall be chinked and fully mortared to maintain interior pipe surface alignment. Any additional cost to perform the jointing shall be included in this item.

3.2 INSPECTION OF PIPE

3.2.1. Installed pipes shall be visually inspected by the Contracting Officer for signs of damage or visual deflection.

3.2.1.2 If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner.

3.3 CLEANING

3.3.1 At the conclusion of the work, the Contractor shall thoroughly clean all of the new pipe lines by flushing with water or other means to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. Debris cleaned from the lines shall be removed from the lowest point on the system. If, after this cleaning, obstructions remain, they shall be removed.

END OF SECTION

SECTION 02821

CHAIN LINK FENCE

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The Contractor shall furnish all labor, equipment, materials and incidentals necessary to install chain link fence and gates, as shown on the Contract Drawings and specified herein.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A392	Zinc-Coated Steel Chain-Link Fence Fabric
ASTM C94	Ready-Mixed Concrete
ASTM F626	Fence Fittings
ASTM F883	Padlocks
ASTM F900	Industrial and Commercial Swing Gates
ASTM F1043 Framework	Strength and Protective Coatings on Metal Industrial Chain-Link Fence
ASTM F1083 Welded, for Fence Structures	Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized)

NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (NJDOTSS)

NJDOTSS Section 907	Fence
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1.3 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The Contractor shall submit the following to the Contracting Officer in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.1 Fencing; SD-02 Shop Drawings; GA

Submit to the Contracting Officer for approval, shop drawings showing layout and details of construction and erection of fencing, gates and accessories required. Drawings shall show post sizes and sections; post setting and bracing, gate details; details of attachment of fabric; and any other details required to erect the fence along the lines indicated on the Contract Drawings. Manufacturer's product data shall be submitted for each type of fence to be used indicating conformance to the below specified product requirements.

1.3.2 Material Certificates; SD-07 Certificates; FIO

Submit to the Contracting Officer statement, signed by an official authorized to certify on behalf of the manufacturer, attesting that the fences and related components meet the specified requirements.

PART 2 PRODUCTS

2.1 CHAIN-LINK FENCE

Chain-link fence shall meet the requirements specified herein and also those provided in NJDOTSS, Section 907.

2.1.1 Fabric

Chain-link fence fabric shall conform to the requirements of ASTM A392 for Class 1 zinc-coated steel wire. It shall have a minimum coating weight of 1.2 ounces of zinc per square foot of coated surface. Fabric shall be fabricated of 11-gauge wire woven in 2-inch mesh. Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage. Fabric height shall be as shown on the Contract Drawings.

2.1.2 Gates

Gates shall be of the type, size, and swing shown on the Contract Drawings, and shall meet the requirements of ASTM F900. Gate frames shall conform to the strength and coating requirements of either ASTM F1043 for Group IA, steel pipe, with external coating Type A, nominal pipe size (NPS) of 1.5 inches. Gate fabric shall be as specified for chain-link fence fabric. Gate leaves more than 8 feet wide shall have either intermediate members or diagonal truss rods to provide rigid construction, free from sag or twist. Gate leaves less than 8 feet wide shall have truss rods or intermediate braces. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding shall not be permitted. Gates shall be furnished with all latches, hinges, stops, keepers, rollers, and other hardware required for proper operation. Latches shall be arranged for padlocking, when so required, so that the padlock will be accessible from both sides of the gate regardless of the latching arrangement. Stops shall be provided for holding the gates in the open position.

2.1.3 Posts

Line posts and terminal (corner, gate, and pull) posts shall be hot dipped galvanized conforming to ASTM F1083. Line posts and terminal posts shall be size NPS of 2 inches and 3 inches, respectively. Posts shall meet the strength and coating requirements of ASTM F1043 for Group IA posts, with external coating Type A steel pipe. Line posts and terminal posts selected shall be of the same designation throughout the fence. Gate post shall be for the gate type specified subject to the requirements in ASTM F900.

2.1.4 Braces and Top Rails

Braces and top rails shall be hot dipped galvanized, steel pipe, size NPS 1.25 inches conforming to ASTM F1043, Group IA.

2.1.5 Accessories

Fence accessories shall conform to the requirements of ASTM F626. Ferrous accessories shall be hot dipped galvanized steel. Truss rods shall be furnished for each terminal post. Truss rods shall be provided with turnbuckles or other equivalent provisions for adjustment.

2.2 CONCRETE

Concrete for fence posts shall be mixed in accordance with ASTM C94. The concrete shall have a minimum compressive strength of 3000 pounds per square inch (psi) at 28 days and shall have a 3/4-inch maximum aggregate size. Grout shall consist of one part Portland cement to three parts clean, well-graded sand and the minimum amount of water to produce a workable mix.

2.3 PADLOCKS

Padlocks shall be keyed alike, per property, and each lock shall be furnished with two keys and meeting ASTM F883, Type P01, Grade 2, 1-3/4 inch.

PART 3 EXECUTION

3.1 GENERAL

Fence shall be installed in accordance with the dimensions, lines, and grades shown on the Contract Drawings.

3.2 EXCAVATION

Post holes shall be cleared of loose material. The ground surface irregularities along the fence line shall be eliminated to the extent necessary to maintain a 2-inch clearance between the bottom of the fence and finish grade.

3.3 INSTALLATION

3.3.1 Posts

3.3.1.1 Line posts shall be spaced equidistant at intervals not exceeding 10 feet. Terminal posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts.

3.3.1.2 Posts shall be set plumb and in alignment. Except where solid rock is encountered, chain-link fence posts shall be set in concrete to the depth of 36 inches. Where solid rock is encountered, posts shall be set to a minimum depth of 18 inches in rock, unless penetration of 18 inches in solid rock is achieved before reaching the minimum 36-inch depth. All portions of posts set in rock shall be grouted. Portions of posts not set in rock shall be set in concrete from the rock to ground level. Terminal posts set in concrete shall be set in holes not less than 18 inches in diameter. Posts set in concrete shall be set in holes not less than the 12 inches in diameter. Diameters of holes in solid rock shall be at least one inch greater than the largest cross section of the post. Concrete and grout shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete and grout shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Group II line posts may be mechanically driven, for temporary fence construction only, if rock is not encountered. Driven posts shall be set to a minimum depth of three feet and shall be protected with drive caps when being set.

3.3.2 Rails

Top rails shall be supported at each post to form a continuous brace between terminal posts. Where required, sections of top rail shall be joined using sleeves or couplings that will allow expansion or contraction of the rail.

3.3.3 Braces and Truss Rods

Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Horizontal braces and diagonal truss rods shall be installed on fences over six feet in height. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required on fences six feet high or less if a top rail is installed.

3.3.4 Chain-Link Fabric

Chain-link fabric shall be installed on the side of the post indicated on the Contract Drawings. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 18-inch intervals. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric diamond or reducing the fabric height. Fabric shall be fastened to line posts at approximately 15-inch intervals and fastened to all rails and tension wires at approximately 24-inch intervals. Fabric shall be cut by untwisting and removing pickets. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined. The bottom of the installed fabric shall be 2 inches, plus or minus a half inch, above the ground.

3.3.5 Gates

Gates shall be installed at the locations shown on the Contract Drawings. Hinged gates shall be mounted to swing as indicated on the Contract Drawings. Latches, stops, and keepers shall be installed as required. Padlocks shall be attached to gates or gate posts with chains. Hinge pins and other hardware shall be secured to prevent removal.

END OF SECTION

SECTION 02930

LOAMING AND SEEDING

PART 1 GENERAL

1.1 SCOPE OF WORK

Furnish all labor, materials, equipment and incidentals required and place loam, finish grade, apply lime and fertilizer, hydraulically apply seed and mulch and maintain all seeded areas as shown on the Contract Drawings and as specified herein, including all areas disturbed by construction activities. Seeding shall be furnished across all of the soil cover areas, as shown on the Contract Drawings.

1.2 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referenced by basic designation only.

NEW JERSEY ADMINISTRATIVE CODE (NJAC)

NJAC 7:26E Technical Requirements for Site Remediation

STATE OF NEW JERSEY (NJ)

New Jersey Standards for Soil Erosion and Sediment Control (SESC), New Jersey State Soil Conservation Committee, July 1999.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM F1632-03 Standard Test Method for Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Rootzone Mixes

ASTM D4972-01 (2007) Standard Test Method for pH of Soils

ASTM F1647-02a Standard Test Methods for Organic Matter Content of Putting Green and Sports Turf Root Zone Mixes

ASTM 2974-07a Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and other Organic Soils

ASTM D5268-07 Standard Specification for Topsoil Used for Landscaping Purposes

ASTM C602-07 Standard Specification for Agricultural Liming Materials

ASTM F1632-03 Standard Test Method for Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Rootzone Mixes

OTHER

Soil Science Society of America (SSSA) *Methods of Soil Analysis*, Parts 1, 2, 3 & 4.

Association of Official Agricultural Chemists (AOAC)

Woods End Research Laboratory, Solvita compost maturity index test.

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330- SUBMITTAL PROCEDURES:

1.3.1 Product Data; SD-03 Product Data; FIO

The Contractor shall submit complete product data for materials and equipment furnished under this Section including seed mixtures and product label information.

1.3.2 Samples; SD-04 Samples; GA

The Contractor shall submit samples of all materials for inspection and acceptance upon Contracting Officer's request.

1.3.3 Certificates of Compliance; SD-07 Certificates; GA

The Contractor shall submit a Certificate of Compliance certifying each material meets the requirements of this Section and is in accordance with NJAC 7:26E-6.4 that the material is free from any chemical contamination. The certification shall provide the following:

1.3.3.1 A statement that the material is virgin material from a commercial or noncommercial source;

1.3.3.2 Name of the affiant and relationship to the source of the material, location where the material was obtained (lot and block), and a brief history of the site which is the source of the material; and

1.3.3.3 A statement that to the best of the affiant's knowledge and belief the material being provided is not contaminated pursuant to any applicable remediation standards based on the results of sampling conducted in accordance with SECTION 01450 – CHEMICAL DATA QUALITY CONTROL.

1.3.4 Maintenance Record; SD-11 Closeout Submittal; FIO

The Contractor shall submit the record of each site visit as specified herein.

1.4 QUALITY ASSURANCE

1.4.1 Soil Testing

1.4.1.1 The Contractor shall submit representative samples of loam to an analytical laboratory of all proposed materials. A representative sample shall be submitted for every 2,000 cubic yards of material.

1.4.1.2 Soil tests and soil test recommendations shall be performed by the Rutgers Cooperative Extension office or an accredited testing laboratory selected by the Contractor and approved by the Contracting Officer. Based on the tests performed, the loam shall be identified as acceptable, acceptable with certain fertilizer and limestone applications, or unacceptable. If the loam is found acceptable, the fertilizer and lime requirements will be as specified or as recommended by the testing laboratory or the Contracting Officer. All loam incorporated into the site work shall match the sample provided for testing. Soil test data shall include the parameters as outlined below.

1.4.1.2.1 Soil physical properties analysis of the soil sample shall consist of particle size analysis of soil sample including gravel content, soil separates of sand, silt and clay including sand fraction sieve size breakdown into very coarse, coarse, medium, fine and very fine diameters, and also organic matter content. Give soil textural classification as defined by the USDA (United States Department of Agriculture) textural triangle. Include testing and recommendations for organics content.

1.4.1.2.2 Soil chemical properties tested shall include soil pH, buffer pH, extractable nutrients, extractable heavy metals, cation exchange capacity, percent base saturation and salt content.

1.4.1.2.3 Soil test results shall include those tests above under submittals and recommendations for corrective actions. It is the responsibility of the Contractor to submit soil materials to the soil testing laboratory in addition to developing recommendations.

1.4.1.2.4 pH adjustment: If required by soil test results, include suggested product to raise or lower soil pH, including chemical composition, source, and suggested rate of application and method of application.

1.4.1.2.5 Fertilizer: If required by soil test results, include suggested product including chemical analysis and composition percentages, source, suggested rate and method of application, mechanically or hydraulically.

1.4.1.2.6 Soil Amendments: If required by soil test results, include other soil additives, and conditioners including their chemical composition and source and suggested rate and method of application, mechanically or hydraulically.

1.4.1.3 In addition, the loam shall be analyzed in accordance with SECTION 01450 – CHEMICAL DATA QUALITY. Sample data shall be sufficient to demonstrate the loam material meets the ASTM D5268-07 requirements.

1.4.1.4 If test results are unsatisfactory, all costs involved in correcting deficiencies in loam to the satisfaction of the Contracting Officer, shall be borne by the Contractor.

1.4.1.5 Test results and determinations of suitability shall be delivered to the Contracting Officer no later than three days prior to the placement of materials.

1.4.2 Submit complete shop drawings of all materials, site location of proposed loam source, soil test results, including analysis and amendment recommendations for loam, equipment furnished under this Section and product information including seed mixtures and product label information. For each type of packaged material (seed, fertilizer, etc), submit the manufacturers' certified analysis. For all

other materials, submit complete analysis by a recognized laboratory made in strict compliance with the standards and procedures of those listed herein.

1.4.3 Work shall be performed in accordance with New Jersey Standards for Soil Erosion and Sediment Control unless otherwise specified.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 New loam shall meet all the requirements listed below and shall be a fertile, natural soil, free from large stones, roots, sticks, clods, plants, peat, sod, pockets of coarse sand, pavement and building debris, glass, obnoxious weeds including invasive species, infestations of undesirable organisms and disease-causing pathogens, and other extraneous materials harmful to plant growth. Loam shall be consistent throughout the project, and shall be obtained from the same approved source, matching approved samples. If source is changed at any time during construction, Contractor shall obtain Soil Tests of new source samples and submit them to the Contracting Officer for review and approval, prior to ordering.

2.1.1.1 Texture of loam shall conform to the classification within the USDA triangle for Sandy Loam. Loam shall be a mixture of sand, silt and clay particles as required to meet the desired soil classification. Loam shall be screened and free of stones larger than ½ inch in any dimension.

2.1.1.2 Organic content of loam shall have a range content of 5.0 to 8.0 percent as determined by the appropriate testing method listed herein. To adjust organic content, loam may be amended, prior to placing and final grading, by the addition of Organic Matter as defined below.

2.1.1.3 The pH of the loam shall have a range content of: 6.0 to 6.8. It shall not be excessively acid or alkaline. Extremes shall be avoided.

2.1.1.4 Topsoil stockpiled under other Sections herein may be used as loam, but the Contractor shall furnish additional loam at his/her own expense if required. Loam shall not be obtained from agricultural land, bogs, wetlands, or marshes.

2.1.2 Prior to placing and fine grading, a separate screened composite sample shall be submitted to an approved soil testing laboratory and tested as defined herein. Test results of samples shall be forwarded directly to the Contractor and Contracting Officer for review and approval. Test results of samples shall conform to the above specifications. Lime and fertilizer shall be spread and incorporated only as per soil test recommendations, after the loam is spread, but prior to fine grading unless alternative plan is proposed by Contractor to apply soil amendments hydraulically with the seed application.

2.1.3 Fertilizer shall be a complete slow-release commercial fertilizer, complying with all Federal and State fertilizer laws. The various components of the fertilizer shall consist of both fast-release and slow-release nitrogen. Fifty percent of the fertilizer components shall be derived from natural organic sources. Fertilizer chemical make-up shall be based on the soil test recommendations by the Soil Testing Laboratory and shall be delivered to the site in the original unopened containers each showing the manufacturer's guaranteed analysis. Store fertilizer so that when used it shall be dry and free flowing.

2.1.4 Lime shall be an approved agricultural pelletized limestone containing not less than 85 percent calcium and magnesium carbonates.

2.1.5 Addition of organic amendments such as compost shall only be incorporated to the surface of the soil and shall conform to the following minimum characteristics:

2.1.5.1 Type: Organic amendments shall be a commercially manufactured humus product that is dark, crumbly, fine textured decayed matter specifically manufactured for use as a soil amendment to promote vegetative growth. Organic amendments shall be well aged, and contain no visible admixture of refuse or other physical contaminants nor any material toxic to plant growth.

2.1.5.2 Carbon/ Nitrogen ratio: This ratio shall be between 12:1 and 25:1.

2.1.5.3 Degree of maturity: Composted organic matter shall be considered stable as determined by the Solvita compost maturity index. Compost must achieve a maturity index of 6 or better, indicating a curing active compost.

2.1.5.4 Organic content shall be 40% minimum on a dry weight basis as determined by loss on ignition.

2.1.5.5 Particle size 100% shall pass the ½-inch or smaller screen.

2.1.5.6 pH shall of the finished composted organic matter shall be near 7.0, and be within the range of 6.0 to 8.0.

2.1.5.7 Salinity: Soluble salts shall be <4.0 mmhos/cm (dS/m)

2.1.5.8 Ammonium content: Ammonium shall be less than 400 ppm on a dry weight basis.

2.1.6 Loam delivered to the site shall undergo chemical soil testing and shall meet the requirements outlined in Paragraphs 1.4.1. herein.

2.1.7 Permanent grass seed shall be from the same or previous year's crop; each variety of seed shall have a percentage of germination not less than 90, a percentage of purity not less than 85 and shall have not more than 1 percent weed content. The seed shall be furnished and delivered premixed in the proportions specified below. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturer for each seed type. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed and also the net weight and date of shipment. No seed may be sown until the certificates have been submitted. The mixture shall consist of seed proportioned by weight as follows:

2.1.7.1 70 percent Turf Type Tall Fescue (*Festuca arundinacea*)

2.1.7.2 20 percent Perennial Ryegrass (*Lolium perenne*)

2.1.7.3 10 percent Kentucky Bluegrass (*Poa pratensis*)

2.1.8 Temporary grass seed shall be 100 percent Perennial Rye.

2.1.9 Fiber mulch shall be a specially processed cellulose fiber containing no growth or germination-inhibiting factors. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. Mulch shall not be mixed in the same tank as the seed.

PART 3 EXECUTION

3.1 APPLICATION

3.1.1 Unless otherwise shown on the Contract Drawings, loam shall be placed to a minimum depth of 6-in, after rolling, on all seeded areas.

3.1.2 For all areas to be seeded:

3.1.2.1 Organic amendments (also referred to as composted organic matter or compost) shall only be used per soil test results and recommendations and consultation with the Contracting Officer.

3.1.2.2 Lime shall only be used per soil test results and recommendations and after consultation with the Contracting Officer. Lime shall be applied at the rate of 50 lbs/1,000 sq ft or as suggested by the soil tests. Lime shall be applied mechanically at least 2 weeks prior to seed and fertilizer applications and incorporated into full depth of topsoil prior to fine grading.

3.1.2.3 Fertilizer shall only be used per soil test results and recommendations and after consultation with the Contracting Officer. Fertilizer shall be in the nutrient ratio as suggested by the soil tests and applied at the rate of 11 pounds per 1,000 sq ft or as suggested by the soil test.

3.1.2.4 Permanent grass seed shall be applied at the rate of 5 lbs/1,000 sq ft. Temporary grass seed shall be applied at the rate of 1 lb/1,000 sq ft.

3.1.2.5 The application of seed and fertilizer may be performed hydraulically in one operation. The application of seed, fertilizer, and lime may not be performed hydraulically in one operation. If materials are to be applied hydraulically, contractor shall notify engineer of rates of application of hydroseeding equipment. Ensure materials are thoroughly mixed. Clean all structures and paved areas of unwanted deposits from hydroseeding operations.

3.1.2.6 Fiber mulch shall be applied at the rate of 40 lbs/1,000 sq ft.

3.1.2.7 Straw mulch shall be applied at the rate of 70-90 lbs/1,000 sq ft and anchored in place.

3.1.2.8 Install tackifier on straw mulch in accordance with manufacturer's instructions.

3.2 INSTALLATION

3.2.1 Coordinate with other trades to limit excessive traffic over installed soils. Once placed, minimize trafficking of all vehicles, and/or equipment in the areas that will be prepared for seeding operations.

3.2.2 Contractor shall make all efforts to not destroy soil structure by excessive traffic working, or compacting the soil throughout the loaming and seeding operation. Utilize the smallest practicable piece of low ground pressure mechanical equipment,

3.2.3 The Contractor shall not handle, move or work soil when wet, muddy or frozen.

3.2.4 The subgrade of all areas to be loamed and seeded shall be raked and all rubbish, sticks, roots and stones larger than 1-in shall be removed and disposed of to an approved offsite location. Subgrade surfaces shall be raked or otherwise loosened to a minimum depth of 6-in immediately prior to being covered with loam. Subgrade shall be inspected and approved by the Contracting Officer before loam is placed.

3.2.5 Immediately prior to seeding, the surface shall be scarified to a 4-6" depth where there has been compaction. Subgrade shall be inspected and approved by the Contracting Officer before loam is placed.

3.2.6 Loam shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete work will conform to the lines, grades and elevations indicated. No loam shall be spread in water or while frozen or muddy.

3.2.7 After loam has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, roots, stumps, litter and other foreign material shall be removed from the loamed area and disposed of. The areas shall also be free of smaller stones, in excessive quantities, as determined by the Contracting Officer. The whole surface shall then be rolled with a hand roller weighing not more than 100 lbs per linear foot of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional loam and the surface shall be regraded and rolled until a smooth and even finished grade is created.

3.2.8 Seeding, mulching and conditioning shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by the Contracting Officer. Hydroseeding operation shall be performed only on a calm day. Do not apply seed on muddy or frozen soil. Protect adjacent and adjoining structures, utilities, walks, pavements, fences and other facilities, trees, shrubs, mulched beds, plantings, and mulched areas from damage caused by planting operations and overspray. Install erosion control measures to prevent displacement of soils and discharge of runoff or airborne dust to adjacent properties and right-of-ways.

3.2.9 Seeded areas shall receive site preparation and be seeded according to the manufacturer's written instructions.

3.2.10 Schedules for seeding and fertilizing must be submitted to the Contracting Officer for approval prior to the work.

3.2.11 Lime (if required) shall be spread mechanically as follows:

3.2.11.1 After the loam is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over loam surface and intermixed to a depth of 4 inches.

3.2.12 If fertilizer is spread mechanically rather than with hydroseeding, fertilizer shall be uniformly spread and immediately mixed to a depth of 4 inches.

3.2.13 Seeding shall be done within 10 days following soil preparation. If more time elapses, then the Contractor shall be responsible for rescarifying and grading topsoil areas before seeding. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be so designed that when the mixture is sprayed over an area, the grass seed and mulch shall be equal in quantity to the specified rates. Prior to the start of work, the Contracting Officer shall be furnished with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.

3.2.14 In order to prevent unnecessary erosion of newly graded slopes and unnecessary siltation of drainage ways, carry out seeding and mulching as soon as satisfactory completion of a unit or portion of the project. A unit of the work will be defined as not more than 20,000 sq ft.

3.2.15 When protection of newly graded areas is necessary at a time that is outside of the normal seeding season, protect those areas by whatever means necessary (such as straw applied with a tackifier) or by other measures as approved by the Contracting Officer.

3.2.16 The use of any pesticide will be prohibited unless directed by the Contracting Officer.

3.3 MAINTENANCE AND PROVISIONAL ACCEPTANCE

3.3.1 Keep all seeded areas watered, fertilized, mowed and in good condition, reseeding if and when necessary until a good, healthy, uniform growth is established over the entire area seeded and maintain these areas in an approved condition including a minimum of four mowings of the seeded areas until final acceptance.

3.3.2 The maintenance period must occur during the growing season between April 30 and October 30. The maintenance period shall begin after the entire project area has been seeded. When the entire project area has been seeded, contact the Contracting Officer for inspection and approval to begin the maintenance period.

3.3.3 On slopes, provide against washouts using materials specified in SECTION 02270-EROSION AND SEDIMENTATION CONTROL and as approved by the Contracting Officer. Any washout that occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.

3.3.4 The Contracting Officer will inspect all work for acceptance at the end of the maintenance period, upon written request, received at least 10 days before the anticipated date of inspection.

3.3.5 A satisfactory stand will be defined as a section of grass of 10,000 sq ft or larger that has:

3.3.5.1 No bare spots larger than 1 sq ft.

3.3.5.2 No more than 5 percent of total area with bare spots larger than 1 sq ft.

3.3.5.3 Not more than 10 percent of total area with bare spots larger than 6-in square.

3.3.6 Furnish full and complete written instructions for maintenance of the seeded areas to the Government at the time of final acceptance.

3.3.7 The inspection by the Contracting Officer will determine whether maintenance shall continue. All seeded areas must be established as specified above for final acceptance.

3.3.8 After all necessary corrective work and clean-up has been completed and maintenance instructions have been received by the Government, the Contracting Officer will certify in writing the final acceptance of the seeded areas. Maintenance of seeded areas shall cease on receipt of final acceptance.

END OF SECTION

SECTION 02950

LANDSCAPING

PART 1 GENERAL

1.1 SCOPE OF WORK

1.1.1 The work of this section consists of all labor, materials, equipment, appliances, and services necessary to provide all new site plantings and plantings in the infiltration basins as shown on the drawings and as specified herein.

1.1.2 Furnish all labor, materials, equipment and incidentals required to install erosion control measures, place sand layer, infiltration planting soil layer (loam), establish finish grade, install plant stock, and maintain this landscaping as specified herein and detailed on the Contract Drawings.

1.1.3 The Work includes:

1.1.3.1 Supply infiltration loam as specified in SECTION 02290 LOAMING AND SEEDING.

1.1.3.2 Supply loam as specified in 02930 Loaming and Seeding

1.1.3.3 Excavate planting pits.

1.1.3.4 Furnish and plant shrubs and herbaceous plants.

1.1.3.5 Prune plant materials as specified.

1.1.3.6 Maintenance.

1.1.3.7 Final cleanup and all other Work required to complete the requirements of this section.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z60.1 Nursery Stock

U. S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008) Safety and Health Requirements Manual

INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA)

ISA Tree and Shrub Transplanting Manual

1.3 SUBMITTALS

The following shall be submitted in accordance with SECTION 01330 - SUBMITTAL PROCEDURES:

1.3.1 Infiltration Area Planting Plan; SD-02 Shop Drawings; GA

The Contractor shall submit an Infiltration Area Planting Plan with 90 days prior to the start of planting. At a minimum, the plan shall include all elements listed below:

1.3.1.1 Planting schedule coordinated with the overall construction schedule.

1.3.1.2 Personnel qualifications:

The planting shall be done by skilled workers, trained and experienced in accepted nursery practices. The work shall be done under the supervision of a qualified planting foreman.

1.3.1.3 Planting stock (type, size, quantity) based on the Contract Documents, along with the name, address and contact phone number of the nursery(ies) supplying the plant materials.

1.3.1.4 Nursery sources

1.3.1.5 Maintenance plan and schedule for the landscaping maintenance period

1.3.2 Plant and Seed Establishment Period; SD-03 Product Data; GA

Calendar time period for the plant and seed establishment periods. When there is more than one establishment period, the boundaries of the planted areas covered for each period shall be described.

1.3.3 Nursery Inspection Certificates for Plantings; SD-07 Certificates; FIO

State Nursery Inspection Certificates and samples of material for inspection and acceptance for inspection and approval.

1.3.4 Plant Stock Certifications; SD-07 Certificates; FIO

Certification by the landscaping contractor that all plant stock obtained for this Work is the plant indicated and of quality as specified.

1.3.5 Plant and Seed Maintenance Instructions; SD-10 O&M Data; GA

The Contractor shall submit complete written instructions for maintenance of the plant, seed, and restoration materials, for use by the Government after the Contractor's one-year maintenance period expires.

1.3.6 Planting Inspection Reports; SD-10 Operation and Maintenance Data; FIO

Complete and submit Planting Inspection Reports, as specified in Paragraph 3.7.5 herein.

1.4 QUALITY CONTROL

1.4.1 Primary Source. All herbaceous, trees and shrubs obtained from nurseries must have been produced by plants with a provenance from within a 200-mile radius of the planting site. The Contractor shall submit written verification from the nurseries on their own letterhead (submittals on contractor letterhead will be rejected), certifying the location of seed sources for all plant material used on this project. However, a reasonable effort shall be made to obtain sources of plant materials as close to the planting site as possible. All plants grown and/or originating from outside the 200-mile radius will be rejected. In addition, all plants must have been grown within USDA Plant Hardiness Zones 6 or 7. Substitutions of specified plant materials shall be approved by the Resident Project Representative and the Engineer of Record.

1.4.2 All plant materials shall be first class representatives of their normal species or varieties unless otherwise specified. All plant materials characteristics shall conform to ANSI Z60.1 "American Standard for Nursery Stock", latest edition.

1.4.3 Pruning of plant materials shall conform to the latest edition of ANSI A300 "Pruning Standard", latest edition.

PART 2 PRODUCTS

Planting of the infiltration basin shall include the following material product specifications for the loam and plantings.

2.1 INFILTRATION AREA FILL

Infiltration Area Soil shall be as specified in SECTION 02230 EARTHWORK AND GRADING.

2.2 PLANTING SOIL LAYER LOAM

Planting soil layer loam shall be as specified in SECTION 02390 LOAMING AND SEEDING.

2.3 PLANT MATERIALS

2.3.1 Shrubs and herbaceous plantings shall be as indicated on the plant schedule presented on the Contract Drawings. Plants shall be nursery grown under climatic conditions similar to those in the locality of the Worksite and shall conform to the variety and sizes indicated. Plants shall conform also to the indicated botanical names and standards of size, culture and quality for the highest grades and standards as adopted in the American Standard for Nursery Stock. Purple Loosestrife (*Luthrum salicaria*) or other known invasive shall not be planted in any of the infiltration and planting areas.

2.3.2 All plants shall be moved with the root systems as solid units with balls of earth firmly wrapped with burlap. The diameter and depth of the balls of earth shall be per ANSI root ball diameter standards based on the plant form (shrub, clump form trees, multi-stem trees, field grown trees, etc.) and for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes, or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once shall be heeled in by setting the ground and covering the balls with soil and then watering.

2.3.3 The height of the trees (measured from the crown of the roots to the tip of the top branch), as specified in the plant list, shall be not less than the minimum size designated on the drawings, and shall conform to ANSI Z60.1 standards. The tree caliper as specified in the plant list shall conform to ANSI Z 60.1 standards. The trunk of each tree shall be a single trunk growing from a single unmutated crown of roots, unless indicated as multiple stem plant material. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sun-scald, frost cracks, or wounds resulting from abrasions, fire, or other causes. No pruning wounds shall be present having a diameter exceeding 2-inches, and such wounds shall show vigorous bark on all edges.

2.3.4 Shrubs shall be a minimum of 2-feet in height and spaced 4-feet by 4-feet apart, or as directed by the Engineer. The measurement for height shall be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to ANSI standards. Single stemmed or thin plants will not be accepted. The side branches shall be generous, well-twiggged, and the plant as a whole well-branched to the ground.

2.3.5 The plants shall be in a moist, vigorous condition free from dead wood, bruises, or other root or branch injuries.

2.3.6 Ground cover plants shall be of size, age, and/or condition listed above. Plants shall be healthy, free of insects, and diseases. Ground cover plants shall be potted or in sod.

2.3.7 Organic matter amendments shall be a commercially manufactured humus product that is dark, crumbly, fine textured decayed matter specifically manufactured for use as a soil amendment to promote vegetative growth. Organic amendments shall be well aged and contain no visible admixture of refuse or other physical contaminants nor any material toxic to plant growth. Organic matter shall meet the following requirements:

2.3.7.1 Carbon/ Nitrogen ratio: This ratio shall be between 12:1 and 25:1.

2.3.7.2 Degree of maturity: Composted organic matter shall be considered stable as determined by the Solvita compost maturity index. Compost must achieve a maturity index of 7 or better, indicating a curing active compost.

2.3.7.3 Organic content shall be 40% minimum on a dry weight basis as determined by loss on ignition.

2.3.7.4 Particle size 100% shall pass the ½" or smaller screen.

2.3.7.5 pH shall of the finished composted organic matter shall be within the range of 6.0 to 8.0.

2.3.7.6 Salinity: Soluble salts shall be <4.0 mmhos/cm (dS/m).

2.3.7.7 Ammonium content: Ammonium shall be less than 400 ppm on a dry weight basis.

2.3.7.8 Loam for planting backfill shall be loam as specified in Section 02930.

2.3.8 All plant stock shall be labeled by common name and Latin binomial and certified as the correct species by the plant supplier and conform with the stock indicated in the Contract Documents.

2.3 INSPECTION OF PLANT MATERIALS

2.3.1 Plants may also be inspected and approved by Contracting Officer upon delivery for conformity to specified requirements as to quality, size and variety. Such approval shall not impair the right of inspection and rejection during the progress of the Work.

2.3.6.2 Plants may also be inspected and approved by Contracting Officer upon delivery for conformity to specified requirements as to quality, size and variety. Such approval shall not impair the right of inspection and rejection during the progress of the Work.

2.3.6.3 Plants shall be accompanied by State Nursery inspection certificates.

2.3.6.4 No plants will be accepted with plastic wrap or if the ball is cracked or broken.

PART 3 EXECUTION

3.1 PLANTING

3.1.1 The furnishing and planting of any plant material includes the digging of the holes, provision for fertilizer, loam backfill, furnishing the plants of specified size with roots in the specified manner, and the labor of planting and mulching.

3.1.2 All plant locations shall be staked out on the ground and the locations must be approved by the Contracting Officer before any excavation is started. If it is necessary to adjust any of the locations, because of unforeseen problems, the changes shall be under the direction of the Contracting Officer. There shall be no extra charges for these adjustments.

3.1.3 The trees and shrubs shall be planted in strict accordance with ANSI standards.

3.1.4 Seasons for planting shall be as specified below:

3.1.4.1 Spring

- a. Deciduous materials shall be planted between March 21 and May 1. Evergreen materials shall be planted between April 15 and June 1.

3.1.4.2 Fall

- a. Deciduous materials shall be planted between October 1 and December 1. Evergreen materials shall be planted between August 15 and October 15.

3.1.5 No trees or shrubs shall be planted until approval of the Engineer is obtained.

3.1.6 Location for all plants and outlines for planting areas shall be staked on the ground as shown on the drawings for approval by the Engineer. The Engineer may make minor adjustments. Maintain always during the planting operations one or more loam stockpiles as specified in 02930.

3.1.7 Plant pits shall be excavated with vertical sides. Areas excavated for trees shall be at least two to three times the diameter of the rootball and the excavated area shall be dug exactly as deep as the rootball. Excavated areas for shrubs shall be at least two times the diameter of the rootball and dug exactly as deep as the rootball. The sidewalls of all planting excavations shall be scarified prior to backfilling. Do not backfill the top of the rootball.

3.1.8 Loam for backfill shall have thoroughly incorporated with it organic matter in the proportion of 1 cubic yard of organic matter to 7 cubic yards of topsoil.

3.1.9 All plant roots and earth root balls shall be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation, and on the ground until the final planting. The plants shall be planted in the center of the excavated areas and at the same depth as they previously grew. Loam shall be backfilled in layers of not more than 9-inches and each layer watered sufficiently to settle before the next layer is put in place. Enough loam shall be used to bring the surface to finished grade when settled. A saucer shall be formed around each plant at the dripline to a depth of 6-inches for trees and 4-inches for shrubs.

3.1.10 Plants shall be saturated with water twice within the first 24 hours of the time of planting.

3.1.11 A 3-inch thick (after settlement) layer of mulch shall be applied to the entire area of each saucer or planting bed. No mulch shall come in contact with the tree and shall be at least 3- to 4-inches away from the root collar.

3.1.12 In the event that rock or underground construction work or obstructions are encountered in any plant pit excavation or bed excavation work to be done under this Contract, alternate locations may be selected by the Engineer.

3.1.13 No debris shall be left at the site. Excavated material shall be removed as directed. Any damage to site or structures shall be repaired.

3.1.14 Each tree and shrub shall be pruned in accordance with the American Nurserymen Association Standards to preserve the natural character of the plant. All dead wood or suckers and all broken and badly bruised branches shall be removed. Pruning shall be done with clean sharp tools.

3.1.15 No debris shall be left at the site. Excavated material shall be removed as directed. Any damage to site or structures shall be repaired.

3.1.16 All shrubs that are “pot bound”; whereas their roots are tightly wrapped around each other after the pot is removed, shall have four (4) vertical cuts sliced into the roots spaced evenly around the root ball from the top of the root ball to the bottom. If this does not loosen the root sufficiently, manually loosen the interwoven roots by hand. Prune any girdling roots.

3.1.17 Infiltration landscaping shall include placement of the planting soil layer to complete final grades shown on the Contract Drawings; the planting of shrubs and herbaceous plants as shown on the Contract Drawings, and maintenance of the infiltration area for one year.

3.1.18 The Contractor shall not utilize equipment in the infiltration area that will damage any final restored surfaces.

3.1.19 Planting shall be done by experienced workmen familiar with planting procedures under the supervision of a qualified foreman.

3.2 INFILTRATION AREA FILL PLACEMENT

3.2.1 The finished grade shall be established using Infiltration Area Fill shall be as specified in 02230. Soil shall be placed in 6- to 12-inch lifts. After soil placement allow a minimum of 24 hours (2 full tidal cycles) for rebound and settlement (natural compaction) before checking finish grade elevations. Re-grade as needed to match pre-existing grades.

3.2.2 The finish grades shall match restoration contours shown on the Contract Drawings and transition smoothly to the surrounding contours. The completed work shall conform to the lines, grades and elevations shown on the Contract Drawings.

3.2.3 After soil has been spread, it shall be prepared by hand raking. Remove and dispose of all stiff clods, lumps, roots, litter, and other foreign material. The area shall also be free of stones greater than 1-inch in diameter.

3.2.4 Previously established grades shall be maintained in a true and even condition throughout the landscaping process.

3.3 PRUNING

3.3.1 Each shrub shall be pruned at the time of planting in accordance with ISA Standards.

3.3.2 Pruning shall be done with clean, sharp tools.

3.6 PLANT MAINTENANCE AND GUARENTEE

3.6.1 Maintenance shall begin immediately after each plant is planted. Once all plant material are installed over the entire project area the Contractor shall request an inspection by the Contracting Officer for provisional acceptance of the plant installation. If the plant materials and workmanship are acceptable, written notice will be given by the Contracting Engineer to the Contractor stating that the plant material installation is provisionally accepted.

3.6.2 The growing season for planting areas shall be between April 15 to October 15. The maintenance period shall encompass at least one complete growing season.

3.6.3 Watering of the plant material shall be performed through one (1) full growing season beyond provisional acceptance for each respective plant material type, deciduous or evergreen as specified in 3.1.4 herein. Watering shall be equivalent to 1 ½" of rain twice per week.

3.6.4 Maintenance shall be monitored and measured by the inspections specified below. If required, corrective measures shall include additional plantings, physical removal of any dead or non-native invasive plants and replacement with new plants, additional watering, or other measures as deemed necessary by the Contracting Officer. No herbicides will be allowed to remove non-native invasive plants.

3.6.5 The Contractor shall provide long-term maintenance instructions for use by the Government for maintenance beyond the Contractor's one-year maintenance period.

3.7 INSPECTIONS

3.7.1 Monitoring Plan

3.7.1.1 The Contractor's PWS shall develop a Monitoring Plan that will be part of the Contractor's submittal. The Monitoring Plan shall be implemented by the Contractor for the one-year maintenance period and shall be utilized during the site inspections specified below.

3.7.1.2 The Monitoring Plan shall focus on obtaining both qualitative and quantitative data on the plant community and documenting the establishment of hydrology during the growing season. Reporting requirements shall be included to keep project personnel and regulatory agencies informed of progress and/or problems. The plan shall also include provisions for implementation of remedial actions, if necessary, and any long-term site management recommendations.

3.7.1.3 During each of the inspections specified below, the Contractor's PWS and Contracting Officer perform an inspection of the entire area. Qualitative assessments shall include visual inspections of the condition of the planting efforts and hydrologic conditions.

3.7.2 Initial Inspection

3.7.2.1 After areas are planted, the Contractor and Contractor's PWS shall request an "Initial Inspection" of the area by the Contracting Officer. The Contractor shall notify all parties of the inspection date with written request at least 10 days prior to the anticipated inspection date. The Contracting Officer and PWS will inspect area, for compliance with the plans and specifications, with regard to the number and quality of plants, plant sizes, species, and location.

3.7.2.2 At the Initial Inspection, areas will be defined by the Contracting Officer as "approved," or "not approved." Areas noted as "approved" shall have sufficient planting coverage and quality. Areas noted as "not approved" are subject to immediate correction by the Contractor. Any and all corrective Work identified during the inspection shall be performed until acceptance by the Government.

3.7.3 Interim Inspection

Approximately 6 months following the Initial Inspection, the Contracting Officer and the Contractor's PWS will perform an "Interim Inspection" of the overall area. The Contractor shall notify all parties of the inspection date with written request at least 10 days prior to the anticipated inspection date. The Contracting Officer and PWS will inspect said Work for vitality and compliance with the contract requirements. If it is evident in the opinion of the Contracting Officer that it is unlikely that the requirements will be achieved, the Contractor shall immediately supplement the plantings as necessary to achieve the required coverage. Any and all corrective Work identified during the inspection shall be performed until acceptance by the Government.

3.7.4 Final Inspection

At the conclusion of the Contractor's one-year maintenance period, the Contracting Officer and the Contractor's PWS will perform a "Final Inspection" of the area. The Contractor shall notify all parties of the inspection date with written request at least 10 days prior to the anticipated inspection date. The Contracting Officer and PWS will inspect said Work for vitality and compliance with the contract requirements. If one year after planting, success of the landscape plantings has not been achieved, the Contractor shall provide and plant additional shrubs and herbaceous plants as directed by the Contracting Officer.

3.7.5 Inspection Reports

Complete and submit three inspection reports no later than 30 days following the Initial, Interim, and final inspections, summarizing the findings of the inspections, any deficiencies noted by the Contracting Officer, and the corrective actions taken to address the issue. Include documentation forms, photographs of the area, a narrative summary of the inspection finds, and records for each maintenance visit performed.